

# American Artisan and Hardware A Record

Sheet Metal - Roofing - Warm Air Furnaces - Stoves



33rd.  
Warm Air  
Furnace Annual

Research  
Residence



University  
of Illinois

Maintained by  
NATIONAL WARM AIR HEATING  
and VENTILATING ASSOCIATION

VOL. 92  
No. 26

December 25—1926  
Chicago

\$2.00  
Per Year

# Pay Your Furnace Bills with Time Payment Contracts

*Discount  
Earned with a  
Rudy T/Pmt Contract*

*\$100.00 Oct. Price  
(10.00) R. P. S. Dividend  
90.00 January Price*

*We deduct this price from your  
T/Pmt Contract and send you the balance  
in cash, less only a 6% service charge.*

## Rudy Profit Sharing Schedule

(Copyrighted)

**R**UDY Dealers have made thousands of dollars under this famous mode of settlement. All bills become due net October first. Rudy does not require trade acceptances. But your advantage lies in the fact that if you anticipate the due date you are permitted to pay the price indicated in the month you settle.

## As Good As Cash

And a Time payment contract is just as good as cash. If you get cash you can anticipate the due date, if you get a contract we will accept it instead of cash and give you the discount.

## Rudy DeLuxe Hy-Power



**Rudy Dealers are prosperous. Get our wonderful 1927 proposition.**

**The Rudy Furnace Co.  
Dowagiac, Mich.**



## Make Your Customer's Credit Earn Your Discount The Rudy Way

**W**HY have big bills to pay on October first? Why let the furnace business strain your finances? Under the Rudy Way you owe for only those furnaces you carry over on October first. You will have your furnaces paid for and the money in your till.

## No Third Party Bankers

The Rudy Furnace Company handles its own time payment paper. There are no third party bankers. Your customer merely pays us, the manufacturer, and you disappear from the transaction. Under the Rudy plan you can do a larger volume at greater profit.

## Rudy T/Pmt Contract

**RUDY FURNACE COMPANY**  
RUDY WARM AIR FURNACE  
RUDY FURNACE COMPANY  
DOWAGIAC, MICH.

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_

DATE \_\_\_\_\_

TO THE HONORABLE JUDGE OF THE COURT OF THE COUNTY OF \_\_\_\_\_ STATE OF \_\_\_\_\_

I, \_\_\_\_\_ of the County of \_\_\_\_\_ State of \_\_\_\_\_ do hereby certify that the within and foregoing is a true and correct copy of the original as the same appears in the books and records of the Rudy Furnace Company, Dowagiac, Mich.

WITNESSED my hand and seal of office this \_\_\_\_\_ day of \_\_\_\_\_ 1927.

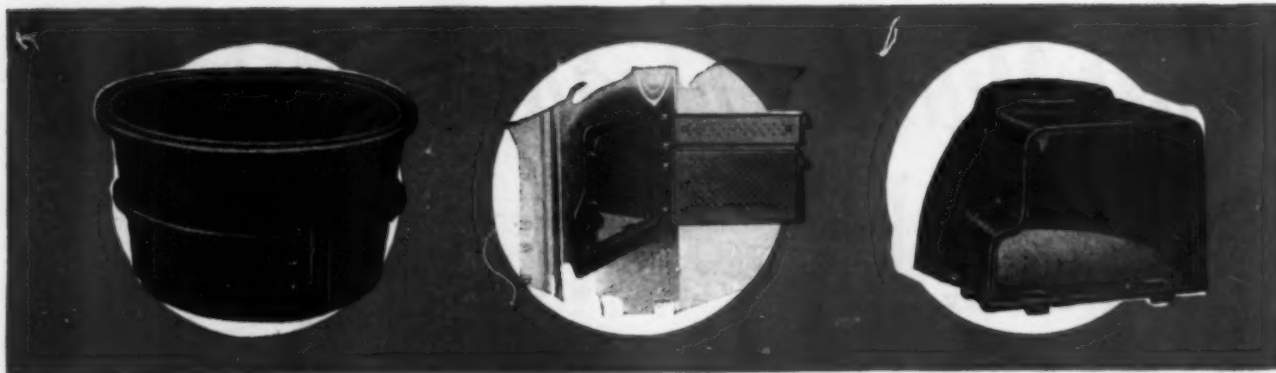
\_\_\_\_\_  
JUDGE OF THE COURT

\_\_\_\_\_  
CLERK OF THE COURT

\_\_\_\_\_  
RUDY FURNACE COMPANY

**That Different Furnace Sold in that Different Way**





Corrugated 2-piece Fire Pot adds strength and also provides additional heating surface. Deep cup joints are gas tight even under strain of expansion and contraction.

Large Feed Door is built in two parts which may be opened separately or together, affording easy access to all points of furnace.

Large Combustion Chamber assures complete combustion—giving full value from every pound of coal, and making frequent firing unnecessary.

# THATCHER METEOR FURNACE

**A** sound investment for your customers! A sure profit-maker and business-builder for **you!**

By installing a Thatcher Meteor Furnace you are giving your customer a Warm Air Furnace that has proved its efficiency and economy in thousands of homes. The special one-piece cast iron radiator,—the large feed door,—the ample size Combustion Chamber and Corrugated Fire-Pot are typical of the many advanced features found in the "Meteor"—features which save your customers time, trouble and fuel.

## EASY TO INSTALL:

The high cast-iron front saves labor in fitting casings. Solid one-piece base plate makes it easy to erect furnace with the certainty that the foundation is level and will remain so. And, of course, all Thatcher Products are sold only through the trade.

*Write for printed matter and full trade information*

## THE THATCHER COMPANY

SINCE 1850

CHICAGO  
341 N. Clark St.

NEWARK, N. J.  
39-41 St. Francis St.

NEW YORK  
21 W. 44th St.



Meteor burns hard coal, soft coal or wood with equal efficiency and economy. Made in sizes and types to suit any house.

# THATCHER

## BOILERS-FURNACES-RANGES

# What Mueller Dealers say about

(Excerpt from letter of  
C. W. Peters & Sons)

"... sold Twenty installations.

"We do not claim all the credit for this success as we feel the way the L. J. Mueller Furnace Company goes after a thing something must come of it."

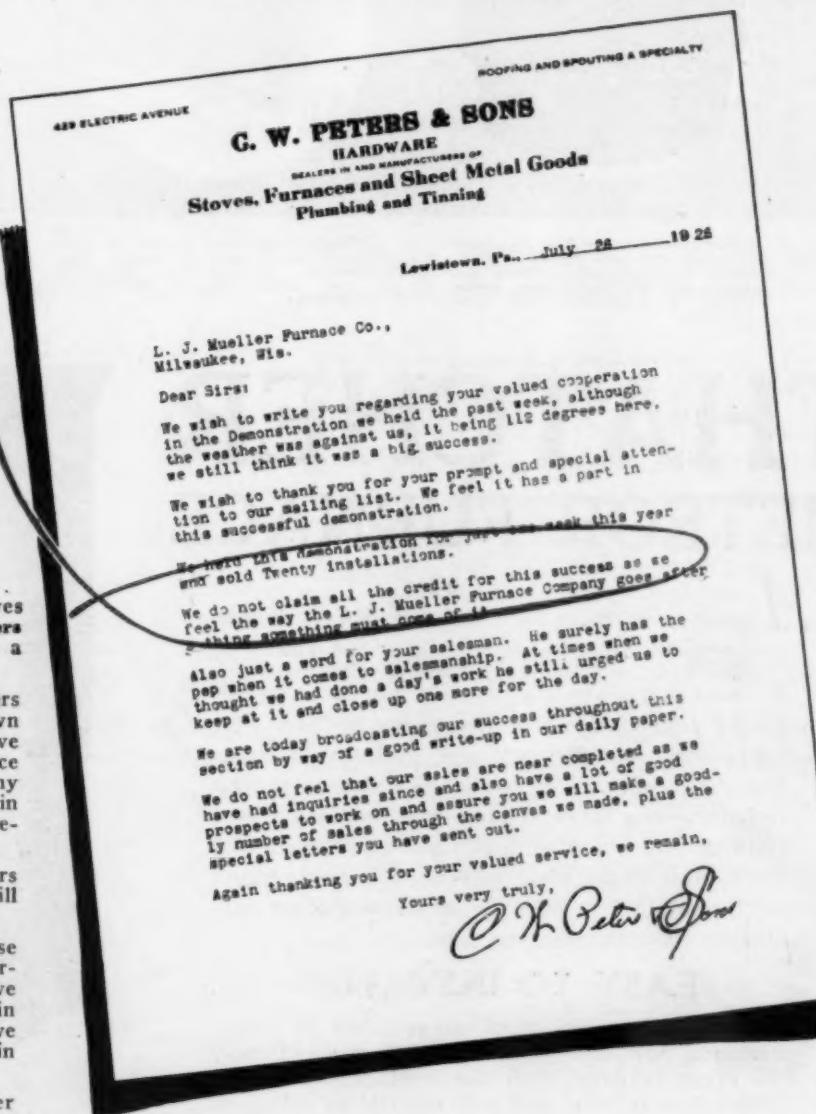
IT isn't what we say about ourselves that counts, but rather, what others say about us—those who are in a position to know.

In this advertisement Mueller dealers do the talking—tell you, in their own words, what their experiences have been with the L. J. Mueller Furnace Company. We cannot think of any better way in which you could gain so true a picture of our dealer relations.

What we have done for other dealers we will gladly do for you if you will give us the opportunity.

The statements published on these two pages are from letters voluntarily written to us by representative Mueller dealers. These letters tell in a few concise words, what we have been trying to say about ourselves in many pages during the year.

If, after reading what these Mueller dealers say, you are seriously interested in the proposition we have to offer, we will gladly place it before you.



**L. J. MUELLER FURNACE COMPANY**  
193 Reed Street Milwaukee, Wis.

Established 1857

Makers of Coal or Gas-fired Warm Air, Steam and Hot Water Systems,  
Cabinet Heaters, Combination Tank Heaters and Garbage Burners, etc.

Warehouses: Boston, Baltimore, Detroit, St. Louis, Minneapolis,  
St. Paul, Seattle, Salt Lake City, Fort Collins, Colo.

# MUELLER

easier to sell than to sell against

When writing mention AMERICAN ARTISAN—Thank you!

# Mueller Sales Co-operation

**What G. J. Turner Hardware, Herrin, Ill., says:**

"Your engineering service, and co-operation of salesman and promotional dept., are of real value to the dealer. Recommendations of satisfied users make sales easy with prospects we would not be able to close on other well-known lines of Furnaces."

**What B. N. Lusby, Princeton, Ky., says:**

"I have been selling and installing Mueller Heating system for two years and am getting practically all the heating business in this territory. I find the Mueller line easier to sell than to sell against."

**What Phil. Panowski, Lake Forest, Ill., says:**

"Your cooperation in rendering me unusual service and assistance has prompted me to express my appreciation to the extent that I will push your line to the exclusion of all others."

**What Geo. A. Dennis, Napoleon, Ohio, says:**

"The service your representative has rendered me in the past has meant sales, progress and profits to me. The factory service has given me prompt shipments, accurate engineering advice, real direct mail service and last but not least,—the MUELLER PROSPECTOR. I should also add that the credit department has rendered a real service in pointing the way to better business methods."

**What J. H. Weber Co., Inc., Milwaukee, says:**

"We have increased our sales and our profits this year, with less resistance and effort than we used to find necessary. It is due to the cooperation your plan gives us, and the complete selling methods we have never had time to work out for ourselves."

**What Koenig-Bowers Hardware Co.,  
Le Mars, Iowa, says:**

"We have been Mueller dealers for twenty-five years, and have always enjoyed the best of relations with the L. J. Mueller Furnace Company."

*These are some of the  
sales helps provided for  
Mueller Dealers*



# FURNACES

—dependable heat—tons of coal cheaper



1

**SPECIAL STEEL**

Most steel furnaces are built of ordinary "tank plate." The WEIR is constructed of a heavy special steel plate rolled to our own rigid specifications. Naturally it costs more, but quality counts.

2

**RIVETED PLUS WELDED**

In order to insure the highest quality the WEIR is both machine riveted throughout and electric arc-welded. There is no bolting of castings to steel. Riveted for strength and welded for absolute tightness.

12

**FIVE YEAR GUARANTEE**

This is an exceptional guarantee, in that it has no strings whatever. It covers the entire furnace, without exception (including fire pot, grates and all).

This guarantee backs up WEIR quality.

11

**WEIR IS THE ORIGINAL STEEL FURNACE**

and is now in its 45th year.

It is acknowledged the leader and is strictly a quality product.

10

**LUGS INSTEAD OF BOLT HOLES**

To eliminate all chances of leakage, lugs are provided for bolting brackets and braces, instead of bolt holes through main drum. Easier for you—better for the home owner.

9

**POUCHES EXTEND THRU FRONT**

There are no door frames on the WEIR. Doors fit direct to pouches which extend thru the casing, eliminating any chance of leakage. Adjustable hinges on doors and surface grinding insure perfect fitting always.

# quality

## warm air heating-

To the hundreds of WEIR dealers it is known, and to those of you who have followed the WEIR story even slightly, it must be apparent that the WEIR is designed solely for quality warm air heating. A reading of the numbered points on these pages should convince you that the WEIR is not built or sold merely as a furnace, but rather as the true heart of a quality warm air heating system. We think of the many points in favor of the WEIR as just so many points of merit in favor of warm air heating. WEIR dealers are warm air heating contractors who know that the price of a good installation is not affected much by the price of the furnace they use. WEIR dealers are men who know that it is unsound business anyway to attempt good warm air heating with an inferior furnace. The number of good warm air heating contractors who know that the WEIR is designed solely for quality warm air heating is steadily increasing. This is known because of the growing number of WEIR dealers. That the number of these dealers will not only continue to increase, but in greater proportion, is assured by the progressive work on the part of the entire industry. The singular fact that there is more profit to be made by doing better work with better products, should lead you to at least give deep consideration to the work of the various organizations which now more than ever are bending great effort to place warm air heating on a higher plane.

YOUR start toward reaping a larger reward for your work will undoubtedly begin when you start selling the WEIR. Write for a copy of the Weir Book of Facts. It tells you all about the WEIR. And if you haven't a handy-to-carry copy of the Standard Code ask us for one—we will be glad to supply you.



**The MEYER FURNACE Co.**  
Peoria, Illinois

3

**SIZE and CONSTRUCTION of RADIATOR**

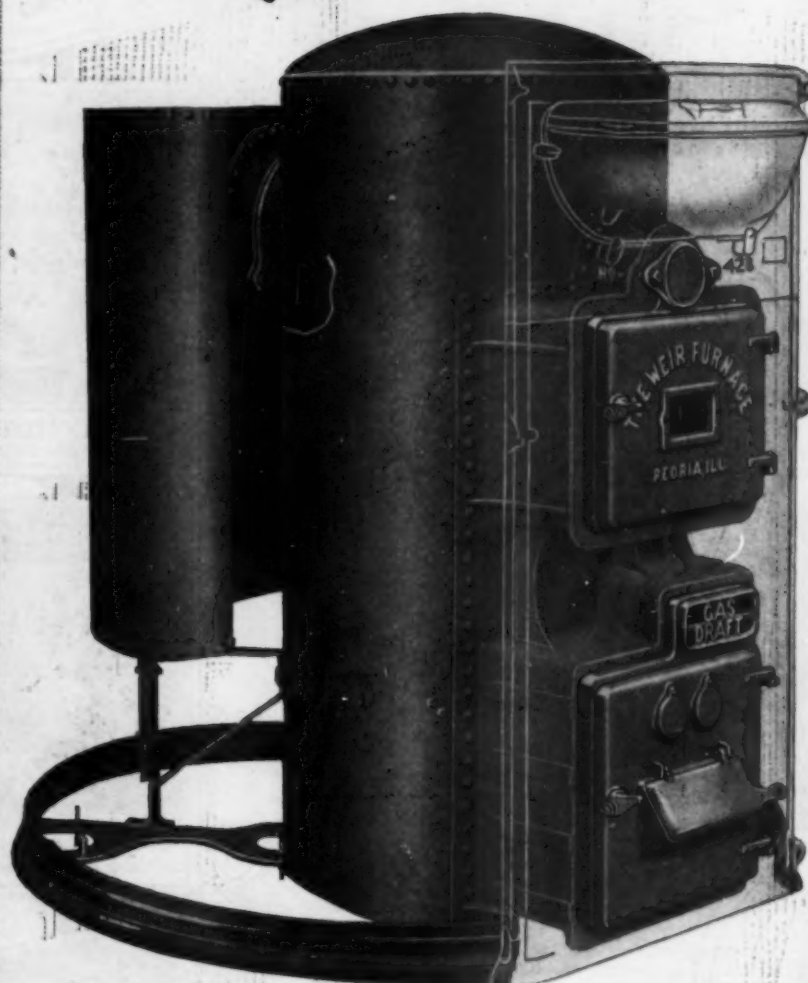
The WEIR has the largest radiator of any steel furnace on the market. Notice how far around each side it extends. It is also deeper. Its inside construction is also different and better. Notice—no dampers.

4

**UNEXCELLED FOR OIL BURNING**

The immense heating surface of the WEIR, together with its absolute tightness, make it the best for oil burning. No dampers or other openings inside the casing.

# Weir



## Steel Furnace

5

**CERTIFIED RATING**

There is a brass plate permanently attached to the front of each WEIR, which certifies its B. T. U. capacity, cold and warm air circulation, and guarantees its performance when installed according to the Standard Code.

6

**GAS AND SOOT CONSUMING**

The WEIR is the only steel furnace having an air-blast smoke burning construction that is a basic part of the furnace itself—not an after-thought or an accessory but a part of the original construction.

This feature makes WEIR the one furnace that produces hard coal and coke results from ordinary soft coal.

Iron or Tile (fire brick) fire pot equipment optional.

8

**PROPER LOCATION OF WATER PAN**

Numerous tests have proven the top to be the best place for the water pan. The WEIR was the first to put it there.

**COMBINATION ARRANGEMENT**

serves as clean out, double check damper and pipe collar.

7

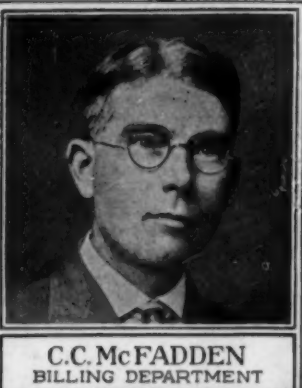
**DOUBLE CASING RINGS**

This is another exclusive feature. This means tight casings—an important step in better, cleaner heating.

**SPECIAL WATER HEATER**

A real water heater—not just a pip \*coll.





*"What's home  
without a Homer"*

**Homer Furnace Co.**  
Coldwater, Michigan, U. S. A.





Note the Beautiful Design and Sturdy Construction Built  
Into the New **HOMER GRAND**

1927  
Model



Note the patented tie rods used on the HOMER GRAND which hold the castings rigidly in place. Impossible for joints to open up and cause gas and smoke leaks. This is only one of the twelve points of superiority embodied in the new HOMER GRAND.

Experienced heating men will recognize at a glance the increased heating power of this carefully designed furnace. Heretofore a great many furnaces were installed which failed to deliver the amount of heat in proportion to fuel consumed, resulting in dissatisfaction to users.

Through exhaustive tests at the National Warm Air Heating and Ventilating Association's Laboratory, basic facts were established which proved conclusively that certain proportions and ratios of different areas must be adhered to that this serious fault might be corrected.

In designing this new HOMER GRAND the above principles were conscientiously followed with the result that we have developed not only a so-called furnace but a high-powered heating unit capable of delivering the maximum amount of heat generated from fuel consumed.

General construction and special cup joint design make this furnace especially adaptable for oil burning equipment.

OUR 1927 DEALER'S SALES PLAN IS ONE OF THE BIGGEST PROGRAMS EVER KNOWN IN THE FURNACE INDUSTRY. WRITE IMMEDIATELY BEFORE YOUR TERRITORY IS CLOSED.

**HOMER FURNACE CO., Coldwater, Michigan, U. S. A.**

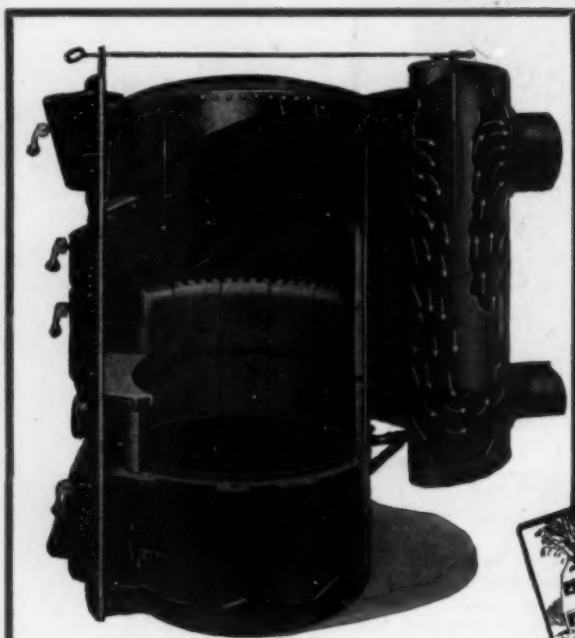
Capacity over  
30,000 Furnaces  
Annually

*What's home  
without a Homer?*

There's Harmony  
in Homer Heated  
Homes

# Announcing

## Success



**THIS** is the Standard Service Heater.

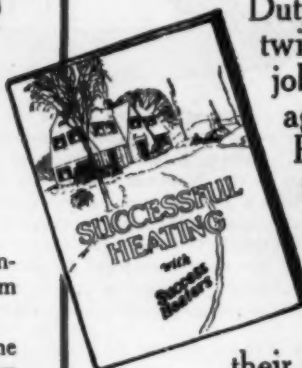
The Success Heater that has made an enviable and remarkable record for efficient warm air heating.

This is the Success Heater for the quality home—a heater that because of distinctive design and exceptional quality holds the lead in the field of better heaters.



**THE** Standard Service Heater line is riveted throughout and is made of Armco-Ingot iron, and this line now contains a *high quality heater* for every Warm Air heating need. It enables you to use the many advantages of selling the *one* line.

With the **SUCCESS** line you can serve every need—the Service Heater for the average size home; the Heavy Duty Service Heater with twin radiators for heating jobs with above the average space to heat; the Power Plus for fan heating systems and for extra large homes, churches, etc., the Life Saver Pipeless and the Wood Burner to meet their special requirements.



## Success Heater

### Des Moines

Warehouses:

Canton, Ohio]  
Spokane, Wash.

- ① **A new welded heater** ••
- ② **The most complete heater line of this type manufactured** •

# Heaters

**T**O meet the demand and round out the Success line we now offer the new welded **NATIONAL-SUCCESS HEATER**.

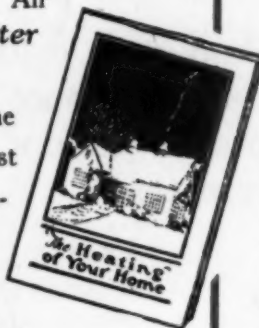
You can now sell *quality* for *every requirement* and do *better heating* on *every job*.

Every Success Heater is specially designed and constructed to meet the most exacting requirements of better Warm Air heating.

Move *up* with the Warm Air heating industry — sell *better* Warm Air heating.

You can do this best with the **SUCCESS** Line, the most complete quality line manufactured.

We have a special proposition on this heater for jobbers and large users.



**T**HE new addition to the Success Heater Line—the National-Success.

A quality welded steel heater that after numerous tests measures up to the high standard demanded by the Success Trade Mark.

A business getter and a heater that will thoroughly satisfy.

*Write for full details TODAY*

**Manufacturing Co.**

**Iowa**

Baltimore, Md.  
Saginaw, Mich.

Pittsburgh, Penna







# WISE

**A**NOTHER record year for Wise Furnaces.

For Twenty-Five years the Wise trade mark has forged ahead year after year.

The Wise policy of consistent good quality and a faithful relationship with our dealers point to still greater business in 1927.

An important factor in the growth of Wise Furnace business and the one of which we are overly proud is the fact that the biggest increase in volume results from the continual growing business of present Wise dealers.

And it is evident that these Wise dealers cannot build business and profits except with high quality furnaces.

**W**RITE today for the complete details of Wise Furnace construction—our catalogue gives the reasons why Wise Furnaces are high grade.



## THE WISE AKRON

# FURNACES



WHEN you start selling Wise Furnaces you start selling better warm air heating---you start with a heating unit that has proven its quality and efficiency for over a quarter of a century.

You sell a heating plant that has as standard equipment many features that are special points of construction on other furnaces.

You sell a furnace that is well balanced, properly constructed in every detail from water pan to grates.

You sell honest value—true quality minus all the unnecessary “frills.”

You sell a warm air furnace that heats efficiently, lasts long, operates economically and gives more value than your customers expect.

You sell a furnace that brings good profits at all times.

*THE Wise agency plan explains in full the reasons why Wise Furnaces are easy to sell—why the Wise agency is held on to year after year and why you should sell Wise Furnaces.*



## FURNACE CO. OHIO

# New JUST OUT



# MONCRIEF

Mention AMERICAN ARTISAN in your reply—Thank you!



# SERIES "C"

**The Greatest Combination of up-to-date Features and Sincere Quality ever built into a Furnace!!**

## You Need This Great Furnace

We designed this New Series "C" Moncrief to outclass and outpoint anything and everything that ever happened in furnace making; and Series "C" does take its place right at the head of the procession because it effects a combination of good points that nothing else can approach.

You need this furnace, to make selling easier, installing quicker, and profits bigger.

Then, we have a new Special Dealer Plan that enables you, an independent dealer, to compete on more than equal terms, and make more money than you ever made before in your life. Other men are doing it, so can you.

Get the Moncrief Special Dealer representative for this great furnace in your town if it is not already spoken for. Get behind this new furnace and push it. Depend on it, the sheer merit of Series "C" will push you farther towards prosperity and success than you ever dreamed.

There can be only one Moncrief Special Dealer in any locality. If you want to be the lucky man, you had better act early. Write, wire, or call, without delay.

**The Henry Furnace & Foundry Co.**  
3471 E. 49th St. Cleveland, Ohio

### 12 POINTS OF MERIT

- 1 Radiator is cast of even thickness entirely in one piece including smoke and clean-out collars. It has extra large opening at connection with the feed section. Clean-out collar extends through front and smoke collar through casing. Radiator can be swung so that smoke collar is handy for connection to flue.
- 2 Casings are of extra large diameter. Upper section is lined with bright corrugated tin to form dead air space.
- 3 Only four joints are inside the casing. All other joints have been eliminated by extending the sections outside the front or the casing. All joints are "double sealed."
- 4 Fire Pot, with straight sides to prevent ashes banking, cast in two sections to provide for contraction and expansion.
- 5 Grate Bars, close fitting, operated by shaker handle, are mounted in a frame. Track cast in sides of ash pit permit quick and easy removal of grate, also the substitution of flat dump grate, in place of bar grate.
- 6 Ash Pit, extra roomy, all one piece seamless casting, projects through the front to which is fitted full opening ground joint door.
- 7 Feed Section, a one piece casting with slanting top, has double seal joints. It extends through front, and the Feed Door is directly fitted to it. Feed Section and Feed Door are disc ground to insure tight fit.
- 8 Extra large hot-blast feed door with chamber to pre-heat current of air admitted to consume gases arising from the fire. This eliminates smoke and soot.
- 9 Solid Cast Front in two sections extends from Base to top of Radiator without a single bolt to connect it to Feed Section and Ash Pit. This allows free expansion and contraction.
- 10 Fronts of Feed Section and Ash Pit, and the Clean-out Collar extend through the front and the Smoke Collar extends through the casing, thus eliminating the usual inside joints at these points.
- 11 Extra large Humidifier, or water pan, with tight fitting convenient cover, provides for moistening the air as it becomes heated.
- 12 Base Rim: Made in four interchangeable sections and bolted to one piece Ash Pit.

# FURNACES

# ROBINSON

## Steel Furnace

*A Complete Heating and Ventilating Unit*

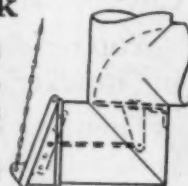


**D**ELIVERY of clean, healthy heat to every part of every room is accomplished most effectively with the use of the ROBINSON STEEL FURNACE—the complete heating and ventilating unit. The ROBINSON FURNACE with its ROBINSON HEAT DISTRIBUTOR, delivers the heat *where* you want it and almost instantly. Its capacity is 1500 cubic feet of air per minute. The fan, operated by the induction type motor, draws the hot air up evenly over the body of the furnace and then quickly forces it out through the lead pipes to the farthest corners of every room.

Marked economy in fuel consumption is also a big feature of the ROBINSON UNIT. Records show that in many instances the saving is as high as 25% while at the same time more efficient heating results are obtained.

### The Robinson Underdraft Check

In addition to the heat distributor, which is an integral part of the ROBINSON STEEL FURNACE, the unit is equipped with the patented ROBINSON UNDERDRAFT CHECK—another reason for heating and ventilating efficiency and economy. This feature permits the cool air from the check damper opening to flow past the opening in the furnace without cooling it. Soot is avoided, the heat is held in the furnace and smoke is almost entirely eliminated.



### All-Steel—Electrically Welded

This Robinson Heating and Ventilating Unit is built of 8 gauge steel. All seams are electrically welded. There is no expansion or contraction. The large water pan provides the proper amount of moisture in the heat where it is drawn from the bonnet and distributed through the pipes into the rooms.

Heating experts are rapidly realizing the opportunities of a complete heating and ventilating unit. That is why the ROBINSON STEEL FURNACE with the ROBINSON HEAT DISTRIBUTOR has won such enthusiastic approval. Complete detailed information will be mailed you on request.

*"As members of the National Warm Air Heating and Ventilating Association, we are increasing our heating surfaces to comply with the National Code Ratings. Our New 1927 Furnace will also contain other new features."*

## The A. H. ROBINSON COMPANY

5103 Detroit Avenue

Cleveland, Ohio

# ROBINSON

## Heat Distributor

*Forces Clean Healthy Heat Into Every Nook and Corner of Every Room*

**E**VERYWHERE, heating engineers have been quick to recognize and appreciate the marked efficiency of the ROBINSON HEAT DISTRIBUTOR because it makes possible almost immediate distribution of heat to the farthest corners of any home or building.

### Installed in the Top of Any Warm Air Furnace

The ROBINSON HEAT DISTRIBUTOR is easily installed in the top of the furnace casing by merely cutting a 17" opening in the bonnet. The Distributor casing extends down through the top bonnet. The electrically operated fan draws up the warm air evenly over the body of the furnace, forcing it out through the long lead pipes to quickly flood the rooms with clean, healthy warmth. You can favor any pipe with extra heat by simply cutting a larger opening in that side of the drum of the Heat Distributor. The Robinson Heat Distributor is made in one size only, and housed in a 17" drum. May be installed in any type of warm air furnace to provide clean, healthy warmth to every part of every room in any dwelling. Its operation costs about the same as burning a 50 watt bulb.

### Flooding Big Structures with Healthy Heat

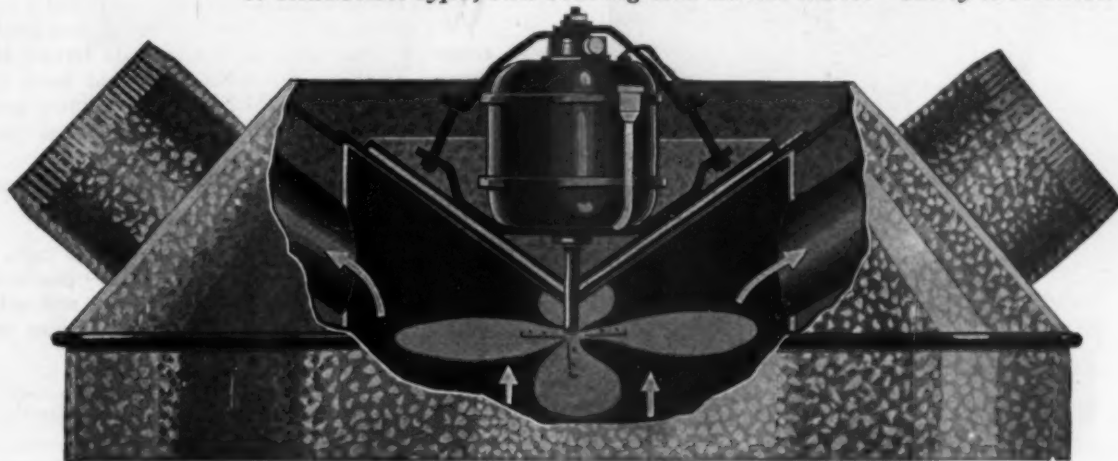
For efficient distribution of heat in large buildings such as churches, factories, schools or any other structure with large rooms or areas to be heated, several Robinson Heat Distributors are employed. Installed at strategic points along the piping they draw the clean, hot air through the pipes and force it out into the larger rooms quickly to overcome cold spots and maintain an even warmth everywhere.

### Provides Proper Ventilation as Well as Even Heat

With the Robinson Heat Distributor System, you provide perfect ventilation in summer as well as heat in the winter. The Robinson Heat Distributor constitutes both a heating and a ventilating system, and with it you can therefore COOL rooms quickly in summer as well as heat them in winter. There is an opportunity for dealers to cash in on this proved method of quicker and more efficient heat distribution. Write us today for full details.

#### FEATURES:

1. No vibration--smooth running and noiseless.
2. Requires no changes in cold air returns.
3. Only one moving part--no back pressure.
4. Installed in less than two hours.
5. No obstruction to gravity system.
6. Induction type, ball bearing end thrust motor--easily lubricated.



**The A. H. ROBINSON COMPANY**

5103 Detroit Avenue

Cleveland, Ohio



# PROBLEM of FUEL ECONOMY SOLVED!

**RIGHT!**

This illustration shows how the MARSHALLTOWN with its SPECIAL FRICTIONLESS REVOLVING DUPLEX GRATE BURNS ALL THE FUEL.

**O**UR famous grate is shaken by a rotary motion. It moves the fuel gently thru the center of the firepot yet sufficiently to keep outer edges of firepot clean. It does not disturb pyramid of fuel but permits air to enter around outer edge of firepot causing burning gases to rise around pyramidal mass of fuel.

This causes perfect combustion as shown in illustration at right.

This is the most worth while fuel saving feature you have ever seen.



**WRONG!**

This cut shows how fuel is WASTED with the ordinary grate.



**W**ITH the ordinary grate the entire bed is violently shaken which causes fuel to fall to a level. This causes a draft over the entire grate forcing the unburned gases up the chimney without being ignited. **THIS IS WASTED FUEL.** The ordinary grate also grinds much unburned fuel when shaken which is **MORE WASTE.**

This one feature alone puts the MARSHALLTOWN at the top of the high grade furnace class.

Three flue crescent radiator—extra large tight fitting doors—extra thick high grade fire brick—positive working direct draft damper—large firepot and extending door pouches which eliminate all chance of dust getting in casing are other features.

**The MARSHALLTOWN Agency is your best bet for 1927—just write for details.**

A complete stock is carried by the following distributors:

Anchor Sanitary Company.....	Pittsburgh, Pa.
Clemens Furnace & Supply Co.....	Canton, Ohio
Fairmont Wall Plaster Co.....	Fairmont, W. Va.
R. M. Baker Sheet Metal Wks.....	Toledo, Ohio
Wells Furnace & Supply Co.....	St. Louis, Mo.
Northwest Furnace Supply Co.....	Chicago, Ill.
McEwen Furnace Company.....	Kansas City, Mo.
Landskroener & Koeppe.....	Flint, Mich.
W. J. Porter.....	Lansing, Mich.
Hastings Sheet Metal Wks.....	Hastings, Nebr.
Soper Furnace Supply Co.....	Salt Lake City, Utah

## MARSHALLTOWN HEATER CO., Marshalltown, Iowa

Say you saw it in AMERICAN ARTISAN—Thank you!

# S.S. = \$\$\$

## The Super-Smokeless Means Larger Profits!



CUTAWAY VIEW OF  
SUPER-SMOKELESS FURNACE

**T**HE SUPER-SMOKELESS Furnace will mean larger profits for you. It will put you in a distinct class—actually above competition. With the SUPER-SMOKELESS you can increase your business and get better prices for your work.

The SUPER-SMOKELESS Furnace is the best furnace from the Home Owner's point of view, and therefore the best furnace for the Dealer to sell. In addition to burning soft coal smokelessly and economically, it has proved a big fuel saver even with hard coal. Actual tests prove conclusively that it develops more heat with less fuel (soft coal or hard) than any other furnace.

The SUPER-SMOKELESS means cleanliness, health, fuel economy and all-around heating satisfaction for the Owner. It means more and better business for the Dealer. It will pay YOU to investigate. Send for complete information and our Exclusive Dealer Proposition—TODAY.

## UTICA HEATER COMPANY

UTICA, N. Y. — CHICAGO, ILL. — MANUFACTURERS OF THE

CELEBRATED LINE OF WARM AIR FURNACES FOR EVERY HEATING NEED



SUPERIOR PIPE

NEW IDEA PIPELESS

SUPER-SMOKELESS PIPE AND PIPELESS

ESSEX PIPE

ESSEX PIPELESS

NEW IDEA RECIRCULATOR

When writing mention AMERICAN ARTISAN—Thank you!



# HERO ONLY

## Offers All These Better Features

Every furnace built has some talking point—but we doubt if any can offer the dealer as many advantages as we have built into the "HERO 600" series. Just a part of them are—

- Exceptionally heavy, all-cast construction.
- Joints all inter-locking or "cup" type; gas tight.
- Shaking roller type grate (upright handle.)
- Air-jet which doubles combustion and saves fuel.
- Air washing humidifier system.

If you want a furnace that will build you a business and a reputation, write for details of the HERO dealer's franchise.

# HERO FURNACE COMPANY

QUALITY FURNACE BUILDERS FOR 31 YEARS

551 De Kalb St.

SYCAMORE, ILL.



# American *Self-Cleaning* Furnace



## Highly Improved

THE self-cleaning action of the furnace keeps the heating surface clean, thus the furnace constantly operates at maximum efficiency. And because of the dust and gas tight construction the warm, healthful fresh air has been an important factor in the success of American Furnaces.

## Superior Features

- 1 Covered joints throughout.
- 2 Large upright shaker.
- 3 Duplex Ball Bearing Grates.
- 4 Large double fuel doors.
- 5 Extra Heavy construction.
- 6 Made in 5 sizes.

## LINCOLN FURNACE

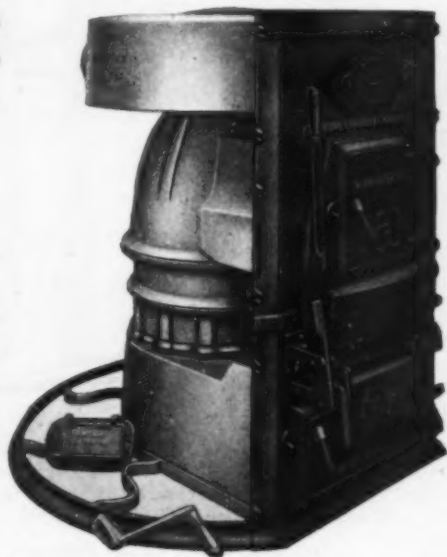
A High Class Top Radiator Furnace

### *Here's Why It's Worthy of the Name*

- 1 One piece radiator with all collars cast on.
- 2 Covered joints throughout.
- 3 Upright shaker.
- 4 Large fuel doors, single or double, optional.
- 5 Made in 4 sizes.

**B**OTH American and Lincoln Furnaces are heavily built of all pure pig iron. They are scientifically designed and correctly proportioned, to insure long life and maximum heating efficiency.

Prompt shipment is guaranteed at all times of the year.



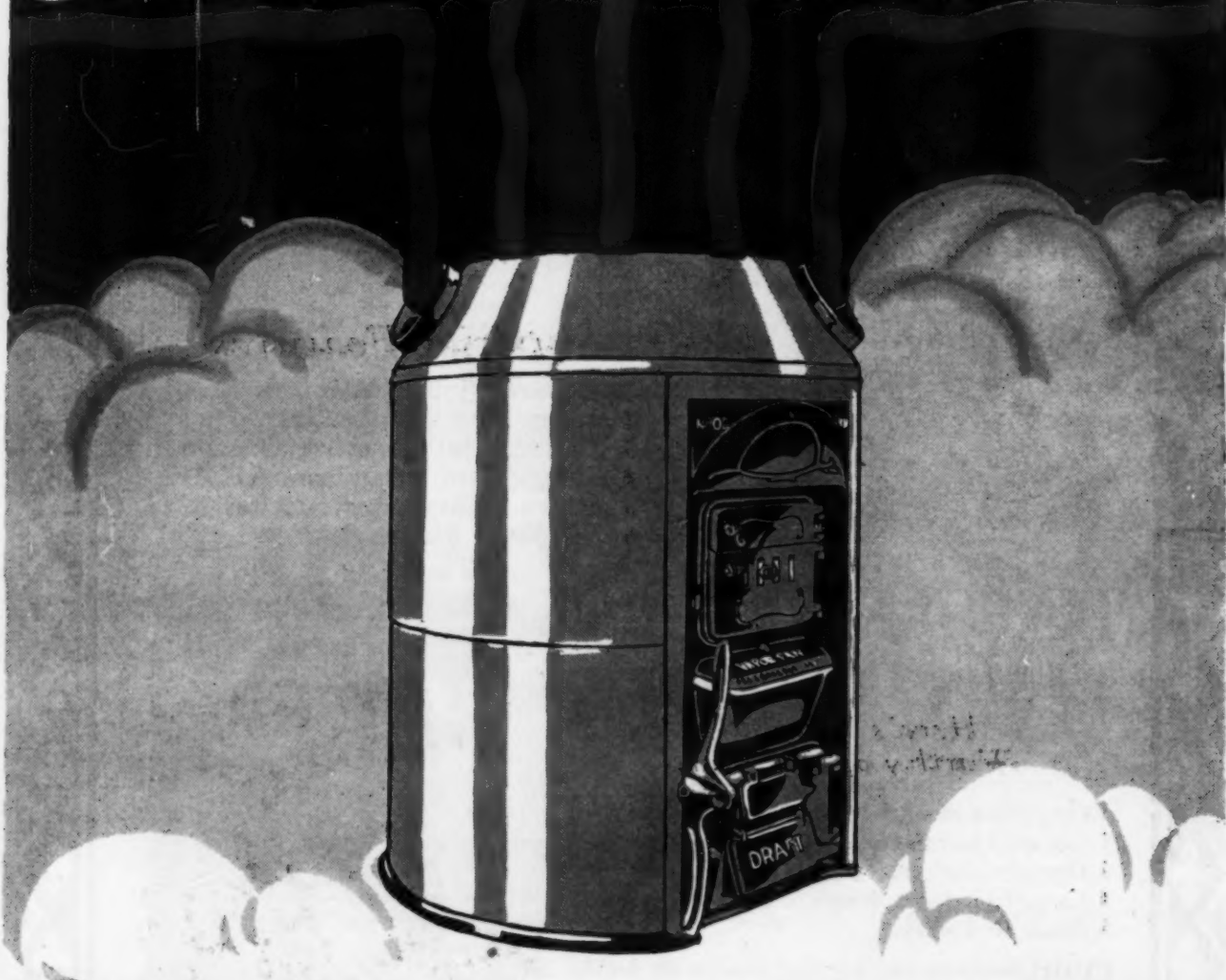
*Write Today For a Catalog.*

**American Foundry & Furnace Company**

*Established 1874*

Dept. 400—Bloomington, Ill.

# OAKLAND OPEN DOME FURNACE



**H**IGH above the field stands Oakland—the standard of comparison in warm air furnaces. When you hear the familiar claim: "It's as good as the Oakland in every way", just consider that imitation is the sincerest compliment.

It's easy to sell an Oakland Open Dome Furnace, and make a friend by doing it. It's easy, perhaps, to sell

cheaper furnaces—but to look the customer in the eye six months later is another thing!

Customers are bound to talk about you. Why not give them a chance to say the good things—the things that send more business to you?

They'll do it if you sell them Oaklands.

*Write us for prices, discounts,  
and a catalogue of the large  
Oakland line.*

**OAKLAND FOUNDRY CO.**

**BELLEVILLE  
ILLINOIS**

When writing mention *AMERICAN ARTISAN*—Thank you!

# 1927 Heralds Bigger Opportunity for Dealers with this World-famous HEATING EQUIPMENT



Known the length and breadth of the North American Continent as "The Best Heat Under the Sun."



When you represent the MONITOR Line in your territory, all of the Monitor prestige and good will, built up through more than a century of service, is focused upon your business.



The MERRIMAC Steel Furnace is designed and constructed to permit the easy installation of an oil burner. Its leak-proof joints make it particularly well adapted to the burning of fuel oil.

It will pay you to buy all of your furnaces and oil burners from Monitor. You gain the advantage of quantity discounts, liberal terms, 100% service and the ability to meet every warm-air heating requirement! Your inquiry will bring complete details without obligation.

## CALORIC SYSTEM OF CIRCULATING HEAT

The biggest value in highest quality Pipe and Pipeless Furnaces. More dealers have made more money out of selling CALORICS during the past ten years than any other furnace on the market.

## MONITOR PIPE AND PIPELESS FURNACES

This popular-priced line has a name and fame that dates back more than a century. Volume of sales increasing yearly, dealers' profits growing in proportion.

## MERRIMAC GUARANTEED STEEL FURNACE SYSTEM OF CIRCULATING HEAT

With the increased use of fuel oil for heating purposes, every live dealer should sell a steel furnace. The MERRIMAC will give you the leadership in this new and rapidly expanding business.

## MONITOR ELECTRIC OIL BURNER

Progressive Furnace Dealers have found in the MONITOR ELECTRIC OIL BURNER a new and profitable source of revenue. Time-tried and tested. Many in use. An unusually attractive proposition.



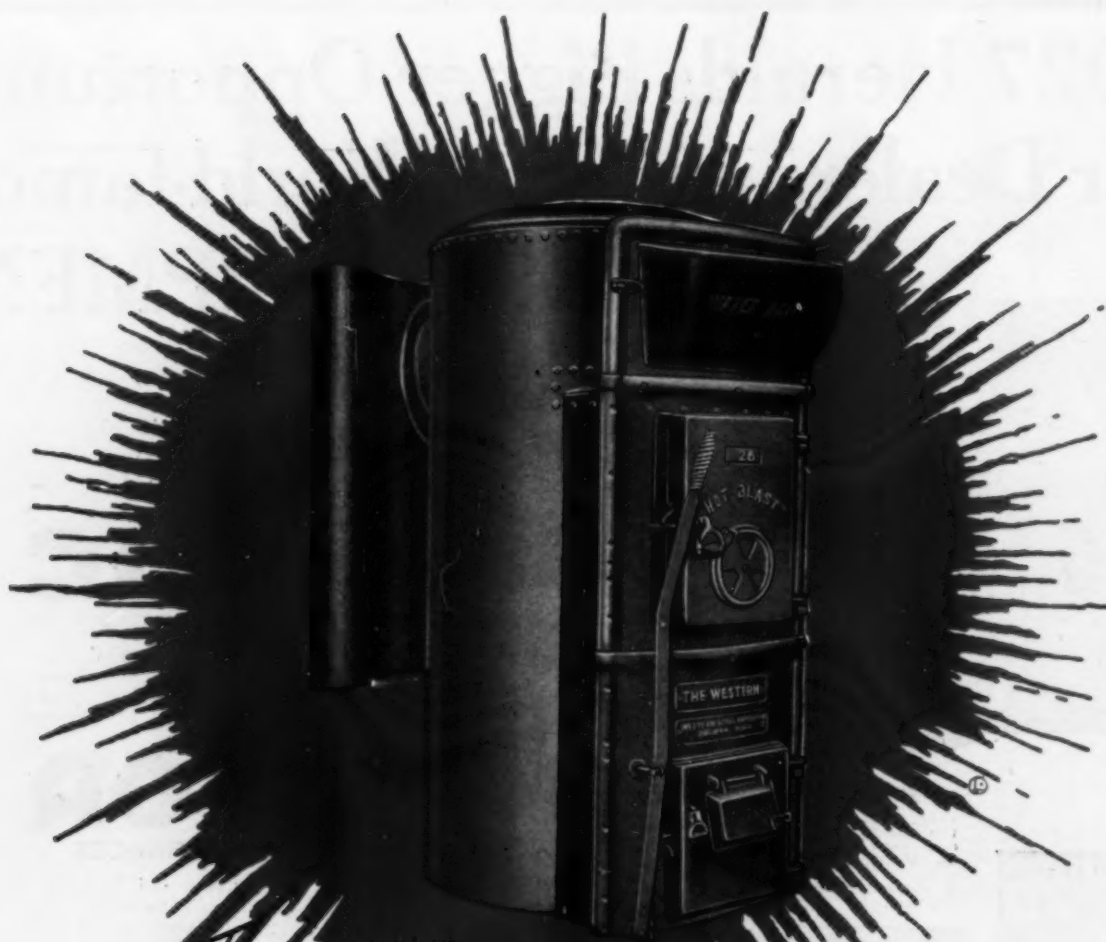
### THE MONITOR FURNACE COMPANY

108 Years of Heating Service  
Cincinnati, Ohio

Complete stocks carried at the following points enable us to make prompt shipments:

Boston	Omaha
Philadelphia	Denver
Detroit	Kansas City
Des Moines, Ia.	Salt Lake City
Minneapolis	Spokane
	San Francisco





# *The* **WESTERN STEEL FURNACE**

## *New Improvements to an Always Popular Heater*

- |  |   |
|--|---|
| <b>1</b> One-Piece Body Construction (no rivets on front extension). | <b>3</b> Heavier and Smoother Shaking Grates.   |
| <b>2</b> Larger Radiator with One-Piece Side-Wall Construction.      | <b>4</b> Every Furnace Completely Assembled to Insure Perfect Fit, and Then Taken Down for Packing. |

Drop us a line for our special dealer's proposition which includes provision for long profits, easy terms, good deliveries, and a special selling plan with many advertising helps.

### **Western Steel Products Co.**

130 Commonwealth Ave.

Duluth, Minnesota



## "The Three Wise Men"

NOT ONLY OF THE EAST—BUT WEST, NORTH AND SOUTH IN 1926 WERE—

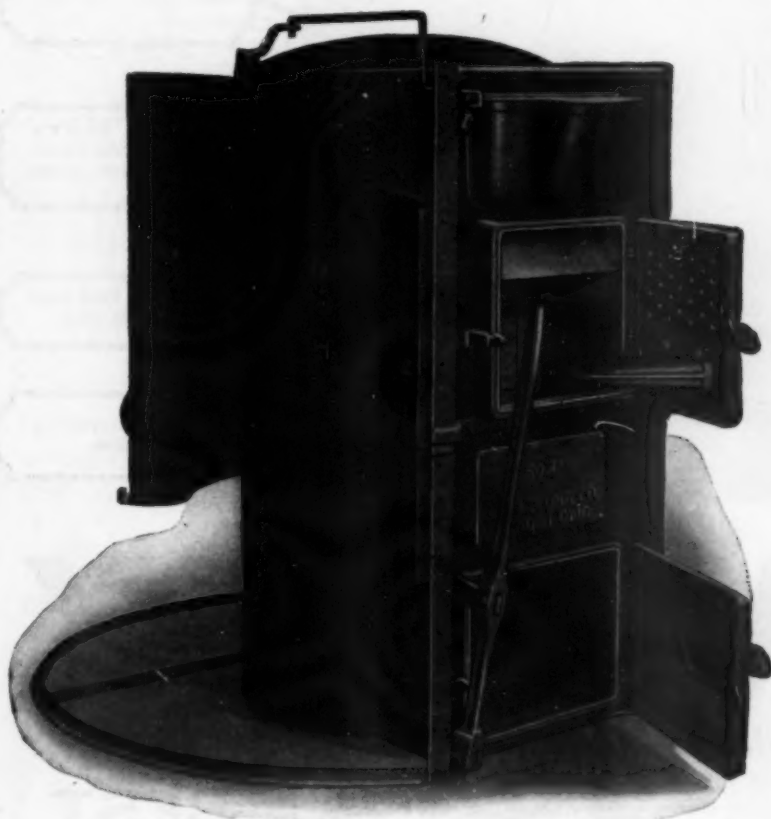
THE JOBBER WHO STOCKED "ARMSTRONGS,"  
THE DEALER WHO INSTALLED "ARMSTRONGS"  
AND THE HOME OWNER WHO BOUGHT



## ARMSTRONG COLD RIVETED & WELDED FURNACES

### Will You Be One of the Wise Men of 1927?

WARM AIR HEATING IS BEING ELEVATED TO A HIGH STANDARD  
AND YOU WILL NEED THE BEST FURNACE TO KEEP UP WITH  
THE ONWARD MARCH OF PROGRESS



The Armstrong will continue to lead with improvements in line with scientific research.

We have built three additions this year and can guarantee snappy service thruout the season.

Attractive samples on special terms to responsible dealers.

Show your wisdom by sending for Armstrong proposition today.

### DISTRIBUTORS:

HEATING SUPPLY CO., PITTSBURGH, PA.  
ROBINSON FURNACE CO., CHICAGO, ILL.  
STOCKHOFF SUPPLY CO., ST. LOUIS, MO.  
CINCINNATI ROOFING & SHEET  
METAL WORKS, CINCINNATI, O.  
A. Y. McDONALD MFG. CO., OMAHA, NEB.

Use  
Coupon

THOMAS & ARMSTRONG CO.  
Dept. 501 LONDON, OHIO

THE THOMAS & ARMSTRONG CO.,  
Dept. 501, London, Ohio.

Please send me at once the Armstrong Furnace Catalog and full details of your dealer proposition.

Name .....

Address .....



# SIMPLEX

**THE  
BIGGEST  
FURNACE  
VALUE  
ON THE  
MARKET**

**T**HE *perfected* and *patented* shaking device alone saves hours of time for your salesmen in making the sale.

Dealers can keep up to date with the SIMPLEX and talk greater grate area per size and more heating surface.

**EASTERN DISTRIBUTOR**—W. F. Angermeyer Co., Pittsburgh, Pa.

**WESTERN DISTRIBUTOR**—Colecock Furnace Co., Seattle, Wash.

**MID-WESTERN DISTRIBUTORS**—Central Heating Supply Co.,

Chicago, Ill.; Mohr-Jones Hardware Co., Racine, Wis.

**NORTHERN DISTRIBUTOR**—XXth Century Furnace Co., Minneapolis, Minn.

**SOUTHERN DISTRIBUTOR**—H. E. Farmer, Nashville, Tenn.

**THE  
BEST  
AGENCY  
OFFER  
EVER  
MADE**

Manufactured by

**SIMPLEX FURNACE CO. — RACINE, WIS.**

Mention AMERICAN ARTISAN in your reply—Thank you!



# To a heating contractor who wants to get more home contracts

## Keith Offers—

1. A furnace which you know and which many of your customers know.
2. A standard of manufacturing unsurpassed in the entire warm air field.
3. A direct plan of sales cooperation in your own community—a *plan that works*.

To a heating contractor who wants more home contracts, Keith offers the real opportunity of 1927. By all means, send the coupon now.

**KEITH FURNACE COMPANY**  
2621 Dean Ave. Des Moines, Iowa

# KEITH FURNACES

Mail  
This  
Coupon

With the Famous Keith Extra-Heat Conveyor

KEITH FURNACE CO.,  
Des Moines, Iowa

Gentlemen:

I'm certainly interested in getting more home contracts in 1927, but I've got to be shown. What have you got to show me?

FIRM NAME \_\_\_\_\_ CITY \_\_\_\_\_

INDIVIDUAL \_\_\_\_\_ STATE \_\_\_\_\_

Say you saw it in AMERICAN ARTISAN—Thank you!

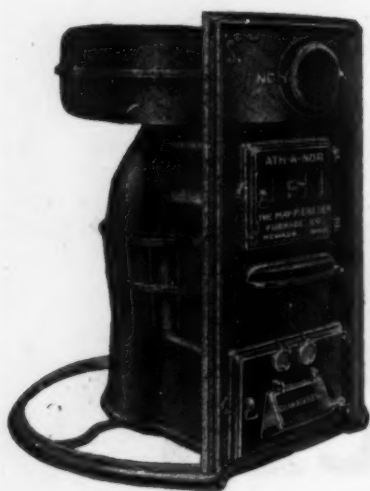


The famous  
**THREE-WAY  
AIR  
BLAST**  
Smoke Consumer

### Notice

*Burn soft coal without smoke—*

**T**HE ATH-A-NOR AIR BLAST supplies additional oxygen which combines with the combustible elements and produces clean, hot flames which entirely consume the heavy smoke and soot of the soft coal.



**T**HE THREE-WAY AIR BLAST is found only on the Ath-A-Nor furnace.

It is not an appliance or just a "selling" feature, but a main part of the ATH-A-NOR efficient design.



**A**TH-A-NOR furnaces are designed in every particular to produce Powerful, Efficient and Economical heating service for many years.

Quality of material, workmanship and design are properly united to give the utmost heating value.

Dealers for many years have banked on ATH-A-NOR and both quality and price have never failed them. You sell real quality at a price consistent with such quality but never high.

We have an engineering department at your service and our sales assistance is favored by hundreds of dealers because it is practical and result getting.

*Let us tell you why ATH-A-NOR furnaces can help your business in 1927. Write today for catalog and agency details.*

**The MAY-FIEBEGER FURNACE CO.**  
Newark, Ohio

Pipe **Vernois** Pipeless



Gaining in every territory because of practical, worthwhile features—

THE dealer who fails to note *every* important advancement in furnace design is overlooking sales and profits. You can sell a line that has *every* up-to-date feature, so why cling to one that is falling behind the times.

The VERNOIS possesses every modern and practical feature covering: first, genuine good quality; second, proper design to guarantee maximum heat from fuel; and third, convenience of operation and freedom from repairs.

The VERNOIS furnace is extreme in its simplicity which makes for greater strength and ease of installation.

Pull more Sales to your shop with  
Vernois features---  
notice this grate construction



NOTHING is smoother than ball bearing operation and that's what makes the VERNOIS grate easy to operate. These grates are exceptionally heavy and of uniform thickness throughout. The ball bearings are held in place by heavy ball races cast in the ash pit. Upright shaker adds to convenience and cleans fire-bed quickly. All parts heavy and will stand long service.

The VERNOIS possesses the most simple and highly efficient grate construction you ever saw and it does not get out of order.

There are many other features that will interest you just as much—for instance, the exceptionally large radiator, the flanged firepot, one-piece ash pit, extra large feed door and ash door.

VERNOIS quality is far above its price which makes it a real business builder.

*Study the VERNOIS now—write for complete catalogs today*

**MOUNT VERNON FURNACE & MFG. CO.**  
Mount Vernon, Illinois

TRAVELING  
SALESMEN:

We still have some good  
territories open for repre-  
sentation.





# The **NEW** HEAVY DUTY 27 inch **PENINSULAR**

*With these  
outstanding  
features—*

**R**IBBED fire pots, which add strength, more heating surface and weight—

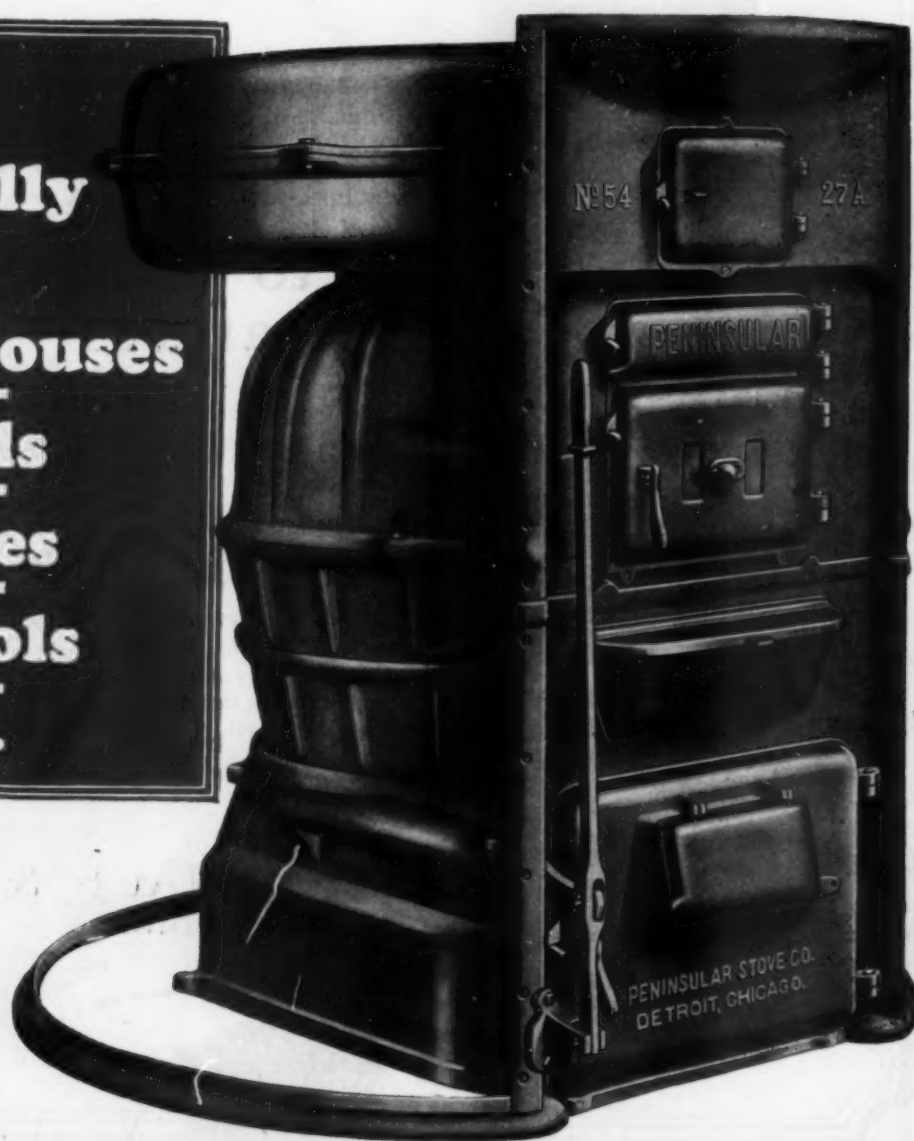
Ribbed feed section, strength where needed—upright shaking lever with Peninsular duplex dump grates that operate on roller wheels—

Deep, square ash pit, easy to clean out ashes and prolongs life of grates. Large double feed door—Large clean out door that swings on hinges—

Casing of proper size—

**Built  
Especially  
for  
Large Houses  
Halls  
Stores  
Schools  
ETC.**

*Write today  
for full  
details on  
the complete  
line—*



**THE PENINSULAR STOVE COMPANY**  
**DETROIT** - - - - - **CHICAGO**

*Say you saw it in AMERICAN ARTISAN—Thank you!*

**1926** DEMANDED A NEW  
TORRID ZONE FACTORY  
**1927** MEANS BETTER SERVICE TO  
TORRID ZONE DEALERS

**TORRID ZONE DEALERS IN  
1926 INCREASED 30% and  
PRODUCTION INCREASED 33 $\frac{1}{3}$ %**

**THESE FACTS** explain why it was necessary for us to build an additional factory at Syracuse and enlarge the original factory at Marshalltown. The coming of 1927 will see both factories producing TORRID ZONES at full capacity—the opening of several new territories—the continued increase in new dealers.

Will You be one of the many hundreds of new dealers added to our list for 1927? If the territory you cover is open we want to explain the LENNOX PLAN for dealers to you.

Let Us refer you to dealers who have been selling TORRID ZONES from twenty to thirty years and longer and let them tell you why they are still selling TORRID ZONES in increasing numbers each year. Let them tell you why it is easier to sell the TORRID ZONE at a profit than any other furnace.



**THE TORRID ZONE  
STEEL FURNACE**

The warm air furnace with the riveted and calked gas tight construction—The furnace with a binding ten year guarantee—The furnace sold only thru authorized dealers—The furnace backed by a reliable and financially sound company with 31 years' experience in steel furnace manufacturing.

**LENNOX FURNACE CO.**  
MARSHALLTOWN, IOWA                      SYRACUSE, NEW YORK

*Manufactures More Steel Furnaces Than Any Other Company in America*

*When writing mention AMERICAN ARTISAN—Thank you!*



# KRUSE OIL FURNACE

ODORLESS — LEAK PROOF — ECONOMICAL

**WELDED STEEL  
COAL & OIL FURNACES**

**KRUSE CO.  
INDIANAPOLIS**

Mention AMERICAN ARTISAN in your reply—Thank you!



# 1927

## Will Be Another Great Year For "AFCO" Dealers

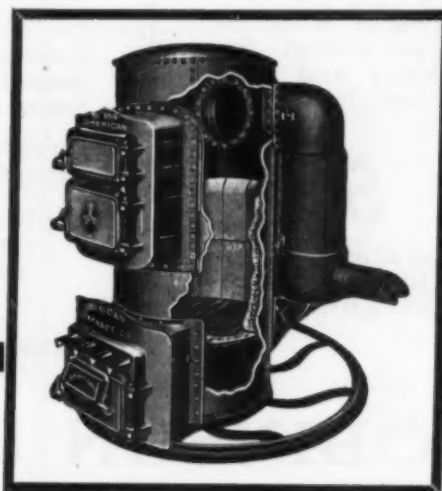
- ¶ 1926 smashed all records for the sale of "AFCO" Boiler Plate Furnaces.
- ¶ More dealers sold a greater number of "AFCO" Furnaces than in any previous year in our history.
- ¶ This proves conclusively there is an increasing demand for the better class of heating.
- ¶ "Dealers Who Know" prefer to sell "AFCO" Boiler Plate Furnaces because they guarantee better heating results. There are no *kick backs*.
- ¶ Each installation stays sold and sells another. More friends—more business.
- ¶ "AFCO" production is 100% furnaces; two models of Boiler Plate and one Cast Iron.
- ¶ Standardization simplifies production and effects economies in buying raw materials, manufacturing, stocking and selling.
- ¶ Increased production has brought lower prices and larger profits for the dealer.
- ¶ Dealers who want 1927 to be more than "just an ordinary year" should send for the "AFCO" Dealer Plan NOW!

**American Furnace Co.**

**Dept. 45**

**2719-31 Morgan Street**

**St. Louis, U. S. A.**



# The "GEM" the highest grade low priced furnace made

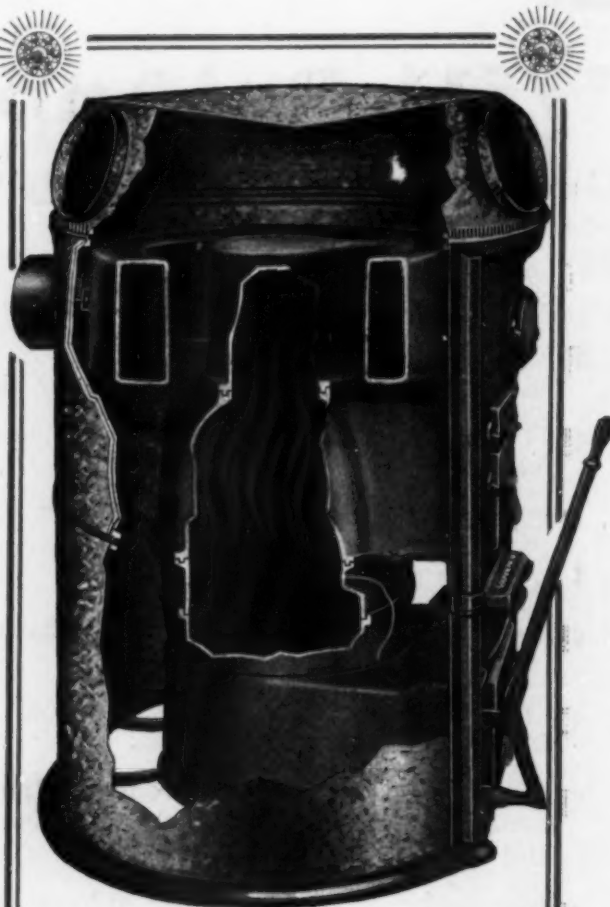
**1**  
The "GEM" radiator--  
made by a new, better  
method of moulding  
with green sand core.  
Better quality and ab-  
solute uniform thick-  
ness. One-piece.

**2**  
The "GEM" has a com-  
bustion chamber that  
is designed correctly,  
heavy and properly  
proportioned.

**3**  
Immense heating sur-  
face. Large double feed  
door has seal-tight  
flange at top and bot-  
tom -- insures abso-  
lutely gas-tight joints.

**4**  
"GEM" fire-pot is in  
two pieces with the  
lower pot slotted. Ex-  
tra heavy and extra  
deep tight joints.

**5**  
A good sized water pan  
with hinged lid to in-  
sure enough humidity.



**6**  
"GEM" grates are  
clinker proof, easily  
operated and the most  
reliable on the market.  
Lever shaker handle puts  
action into every inch of  
grate surface. A new style  
developed by careful study  
and years of experience, as  
fool-proof as a grate can be.  
All parts, including shaker  
handle, are of malleable iron.

**7**  
Large correctly shaped  
ash pit and solid one-  
piece base ring at-  
tached.

**8**  
Every "GEM" is OVER-  
SIZE -- measure them  
and see for yourself.

**9**  
Full cast front of  
course and numerous  
other parts you can't  
find on other furnaces.

**10**  
The "GEM" is easy to  
case--plenty of room to  
attach casing to front  
to make quick and  
perfectly tight fit.

**H**ERE it is—it is up to you to actually  
see the "GEM" and realize for your-  
self that it is the top-notch furnace we say it is.

Agencies for 1927 are being let NOW.  
Remember that there is over fifty years' ex-  
perience behind the "GEM."

Remember that the "GEM" was especially  
designed to meet the high quality, fair price  
demand and that it *does*.

Remember, that it is a real record breaker for  
sales and profits, and that we can interest you.

*Write today for complete catalog and  
agency details. Ask us about the  
National Air Moistener—the humidi-  
fier for every furnace heated home.*

**ROBINSON FURNACE COMPANY**  
**205 West Lake Street** . . . **Chicago, Illinois**

When writing mention AMERICAN ARTISAN—Thank you!

# All famous features now combined, in one furnace

**A**T Reduced Prices the Premier DeLuxe now gives you not one, not two, but All Three of the strongest selling features in the furnace business:

One-Piece Radiator  
Efficient Smoke Consumer  
Automatic Humidifier

And—in addition—every other popular feature you can name. For the first time you can offer the best features of ALL furnaces, at an order-landing price!



**PREMIER**  
**DE LUXE**  
of Dowagiac

*Plus*

5-year Guarantee  
Bond

Engineering Plans  
Free

"Made-to-your-order"  
Merchandising help  
Free

Get this  
**FREE**  
without  
obligation

The New  
1927  
PREMIER  
proposition  
to  
dealers

Now  
this  
postal Today

Read other  
side

PLACE  
TWO-CENT  
STAMP  
HERE

Premier  
Warm Air Heater Co.  
Dowagiac, Mich.  
U. S. A.



# "Hand-me-down" merchandising Plans wont do!



Premier Merchandising Help is  
"Made-to-Your-Order" and FREE!

**Y**OUR experience in the furnace business has shown you that while "hand-me-down" sales plans may work for some dealers, they don't fit your local needs. That is why Premier—on top of building you the "DeLuxe" which combines ALL of the best sales features at a price sensationally low—now offers "Made-to-your-order" Merchandising help free!

Members of the Premier Merchandising Bureau visit you, study your problems, instruct your salesmen and installers, and work out with you practical ways to meet your particular conditions and thereby land more jobs. Real down-to-earth, on-the-ground selling help that really helps! The kind you've been looking for! The kind that works and makes you money!

Mail the card below for full details of this remarkable new 1927 Premier proposition and the new reduced prices on the Premier DeLuxe—"The Furnace that combines All Famous Features." Do this to-day—Now!



## PREMIER

### DE LUXE

of Dowagiac

Premier Warm Air Heater Co.  
Dowagiac, Michigan

Date.....192

Without obligation, you may submit the New 1927 Premier proposition including new reduced prices, and full details of your Free Made-to-order Merchandising help for dealers.

Name.....

Address.....

Remarks

Clip  
this  
postal  
and  
mail it  
today

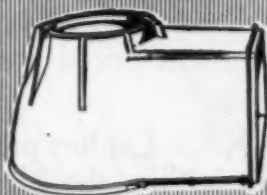
# Here Is The Furnace Line Worthy of Your Efforts!



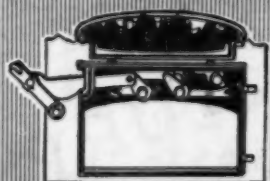
Gilt Edge "500" Series  
Guaranteed for a Lifetime



Two Piece All Cast  
Radiator



Ribbed Combustion Dome



Gilt Edge Patented Anti-Clinker  
Bar Grates  
(In Dumping Position)

Typical Gilt Edge  
Double Contact  
Sealed Joint—  
Absolutely Gas and  
Smoke Tight



Ribbed Straight Side Flueport



One Piece Burn Plate

THE greatest jockey in the world can't drive a nag for a win in the Kentucky Derby. The finest mechanic can't build a reputation for quality workmanship on a cheap line of furnaces.

Three things are going to make your business successful—a thorough knowledge of installation practice—a durably constructed, correctly proportioned line of warm air furnaces—ability to sell yourself and your services. If any of these three big keys to success fail you, your business is going to suffer.

With the Gilt Edge Guaranteed line of warm air furnaces, you are bound to win prestige and resulting prosperity. You know the installation business—you are offering your trade a product guaranteed; (the guarantee is actually riveted on the front of each furnace) by a concern entering its 51st year in business,—modern Gilt Edge merchandising methods and advertising assistance offer a stimulation to conscientious sales effort.

There they are—the three big necessary features of a successful business gathered together in an unbeatable combination.

The Gilt Edge line is truly a furnace line worthy of your effort.

**GILTEDGE**  
*Guaranteed*  
**FURNACES**

MFG. BY

R. J. SCHWAB & SONS CO.

283 Clinton St.

Milwaukee, Wis.

GILT EDGE SPECIFICATIONS

Model No.	Area Grates in Sq. In.	Diameter Casing	Height of Casing	Diameter Smoke Pipe	Leader Pipe Capacity Sq. In.	Shipping Weight in Pounds
534	226.98	42"	51"	8"	500	1075
537	314.16	46"	54½"	9"	650	1250
540	415.47	50"	58"	9"	825	1600
545	530.90	57"	60"	10"	1000	2000

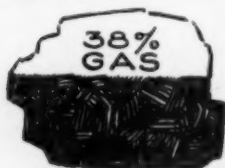
Mention AMERICAN ARTISAN in your reply—Thank you!

# The SECRET of XXth CENTURY SALES



The above is a cutout section of a XXth Century Furnace. Notice how the metal shield directs the air inlet out around the fire pot and up through the tapered air tubes and out over the gases that are being distilled from the coals

**F**EW realize that an average of 38% of its weight in gas is distilled from the ordinary soft coal while burning. Unless arrangements are made to burn these gasses they will either escape up the chimney or form soot, which prevents heat radiation.



38% of its weight in gas is distilled from ordinary soft coal while burning.

Notice in the illustration above the special metal shield on the XXth Century Furnace. It diverts part of the air intake out around the fire pot and up through the special air tubes to the gas above the burning coal.

This fresh air ignites the gasses. It causes them to radiate heat the same as the burning coal.

In the ordinary furnace, air coming up through the coal loses practically all its

oxygen by the time it reaches the top. None is left to burn the gasses which constitute an average of 38% of the weight of the coal.

This in a few words is the reason why XXth Century Furnaces give more satisfaction than the average furnace. It is the reason why dealers all over the country have built big businesses selling XXth Century Furnaces in the past 33 years.

There are many other XXth Century Products that are profit makers for the dealer—Room Heaters, Auxiliary Gas Burners, XXth Century Overhead System of Heating and Portage Furnaces priced low to meet a popular demand.

Write today for the XXth Century proposition. It eminently justifies the biggest merchant in town. Use the coupon if you wish.

The XXth Century H. & V. Co.  
Akron, Ohio

Without obligation please send us full facts on your dealer proposition.

NAME

ADDRESS

CITY

STATE

American Artisan

The XXth Century H. & V. Co.  
Akron, Ohio

**XX<sup>TH</sup> CENTURY  
HOT BLAST  
FURNACE**

"Standard of Fine Furnace Value for 33 Years"



# RYBOLT



## The Greatest Furnace Value Ever Seen

Two years have elapsed since the improved Rybolt was placed upon the market.

These two years have been the most successful in our history.

The reason is, we believe, that the improved Rybolt is the greatest furnace value ever seen.

There are *cheaper* furnaces, and furnaces that *cost more*—but there is no *better furnace* obtainable at *any* price.

The Rybolt line for 1927 offers bigger opportunities than ever to the alert furnace man.

Write now for our new catalogue and dealer terms.

**THE RYBOLT HEATER COMPANY**  
MILLER ST., ASHLAND, OHIO

# NIAGARA

## FURNACES



**SALES  
PROFITS  
for**

**1927**

**NEW FRIENDS**

**NEW BUSINESS ~**

### NIAGARA FURNACES

*Mean  
Quick Installation  
Rapid Turnover in  
Profits  
Long Satisfactory  
Performance  
Permanent Friends*

**E**ACH new year finds an increasing number of Niagara Dealers.

Their success in handling this excellent equipment inevitably secures other permanent accounts year by year.

If you are not already representing this nationally known furnace in your territory and desire to better your connection for 1927—write or wire us at once.

We will help you make 1927 your Banner Sales Year.

**THE FOREST CITY FOUNDRY & MFG. CO.**  
1220 Main Avenue Cleveland, Ohio

*Manufacturers  
of  
Monarch  
and*

# NIAGARA Furnaces

Mention AMERICAN ARTISAN in your reply—Thank you!

# The *Grand* Builds Volume— Wins Profits— Makes Friends—

## Radiator

The "GRAND" Radiator is of the horseshoe type and is cast in two parts. Its design provides excellent heat distributing powers; flues are oversized to insure free circulation; and hot gases are forced to pass around both sides of the radiator, thus extracting the maximum heat from all fuel.

## Feed Section

Feed Section of the "GRAND" Furnace has been designed to provide the greatest possible radiation and to insure the burning of all gases, thus extracting the most heat from the fuel used.

## Firepot

"GRAND" Firepots are extra heavy and ribbed, made in two pieces to allow for expansion and contraction.

## Ash Pit

Ash Pit is extra deep and large, keeps draft clear and ashes away from grate. Depressed bottom permits sprinkling when removing ashes.

## Base Ring

Base Ring and ash pit bottom are cast in one piece, thereby reducing installation time and expense.

## Clean-Out

Large rectangular shape Clean-Out opening, conveniently located to make cleaning out very easy and simple.

## Hot Blast

Provides fresh oxygen which mixes with gases, insuring complete combustion. A great saver of fuel.

## Feed Door

A special feature of all "GRAND" Furnaces is a large fire door, which permits the passage of large size shovel or large pieces of wood.

## Water Pan

The "GRAND" Water Pan with proper capacity is correctly located to moisten the warm air before it leaves the furnace.

## Grates

The grate bars are of the triangular type. Both shaker and side bars are interchangeable; the removal of any or all bars is accomplished by removing locking plate. This plate locks in grooves on side grate bars, making it easy to remove grates without the use of tools.



## Puts New Life into Furnace Sales--

Close study of the Grand furnace, the company that builds it, and the facilities for manufacturing it, will convince you as it has many other dealers, that the Grand is capable of giving you larger profits and quicker turnover.

**Exclusive Features  
in design and  
construction insure  
dealer confidence  
customer satisfaction—**

Since we are not covering the territory direct, **AN UNUSUAL OPPORTUNITY AWAITS THE JOBBER OR LARGE INSTALLER IN TERRITORY NOT CON-TRACTED.**

**The Cleveland Co-Operative Stove Co.**  
2323 East 67th Street  
CLEVELAND, OHIO

**Mail  
the  
Coupon**

*To-day*

The Cleveland Co-Operative Stove Co.,  
2323 East 67th Street, Cleveland, Ohio

We are interested in your "GRAND" Furnace Proposition for 1927. Please send catalog and discounts to jobbers.

Name .....

Street .....

City..... State.....

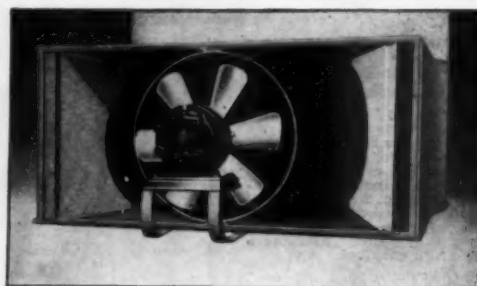


## RICHARDSON "Perfect" WARM AIR HEATER



*plus*

## AUTOMATIC FURNACE FAN



The Furnace Fan with Richardson "Perfect" Warm Air Heaters stimulates air circulation under all conditions at very low extra cost. When forced air is not required, system operates by gravity circulation. Four changes of air per hour in every room. Cooling and ventilating system in summer time.

# The Acme of Heating Perfection!

**F**ORCED air circulation is one of the greatest developments of modern heating science.

But it is not designed to "boost" an inefficient heater or make coal go further with an inferior type.

This new principle finds its highest development in conjunction with the Richardson "Perfect" Warm Air Heater. Already guaranteed by bond for superior performance, the "perfect" exceeds the highest expectations when equipped with an automatic furnace fan.

As a heating expert it is your duty to get the utmost advantage from this new method. Make sure of the finest results for your next client by installing a Richardson "Perfect" Warm Air Heater equipped with the Automatic Furnace Fan.

*Write for further details and illustrated literature with plans and full information.*

## RICHARDSON & BOYNTON CO.

*Manufacturers of Richardson "Perfect"  
Heating and Cooking Apparatus Since 1837*

260 Fifth Ave., New York City

New York, Philadelphia, Boston, Chicago, Buffalo



*When writing mention AMERICAN ARTISAN—Thank you!*

## Your Customer Would Insist on a Front Rank Furnace

If your customer knew all about furnaces he would want a Front Rank Steel Furnace in his home.

He would know that the Front Rank Steel Furnace is gas-tight because joints are cold-riveted instead of cemented.

He would know that the Front Rank Steel Furnace has greater radiating surface.

He would know the Front Rank Steel Furnace allows a more rapid and free upward flow of air because its smooth vertical construction does not interfere with the flow.

He would know that a Front Rank Steel Furnace will outlast any other type because steel is tougher and because a steel furnace properly lined with fire brick has a higher resistance to fire.

He would consider the small extracost



of a Front Rank Steel Furnace a fine investment. You will find that the Front Rank dealer proposition has features that will interest you as a progressive furnace dealer—write today.

LANGENBERG MANUFACTURING CO.  
4545 N. Euclid Avenue    •    •    •    St. Louis, Mo.

Shipments made from St. Louis, Mo.    •    •    Lincoln, Nebr.    •    •    Richmond, Ind.    •    •    and Pittsburgh, Pa.

**FRONT RANK**  
TRADE NAME      REGISTERED  
**ALL STEEL WARM AIR FURNACE**

# HALL-NEAL VICTOR FURNACE

## *with FIN radiation*



Patented  
January  
2, 1923

*faster air travel*

*greater volume of air  
circulated*

*higher temperature at register  
faces*

*positive flow of heat to every  
register*

*boiler plate construction—  
LIFETIME quality throughout*

## *cuts fuel costs 20 per cent by increased efficiency*

**better  
business for  
furnace dealers**

Hall-Neal Victor Furnaces build increasing good-will for good dealers with every installation made. Hall-Neal design is a recognized improvement of great importance in warm air heating. Prices are competitive.

We give good dealers exclusive franchises. Here is a real opportunity to improve your business. Send in the Coupon below and get full particulars.

Hall-Neal Furnace Co.,  
1322 N. Capitol Ave.,  
Indianapolis, Ind.

Gentlemen:—Please send your catalog and prices of Hall-Neal Victor Furnaces with FIN radiation.

Name.....

Address.....

City.....

**H**ALL-NEAL Victor Boiler Plate Furnaces are more efficient because they have new, exclusive FIN radiation—patented Intercepting Heat Conveyors.

The FIN radiation on the furnace body increases radiating surfaces 300 per cent over conventional radiator designs.

*Four great advantages result.*

1. Twenty per cent—one fifth—and sometimes more of the fuel bills are saved because of the increased efficiency of this patented and exclusive improvement in furnace design.
2. Warm air temperatures at the radiator faces are much higher than other warm air furnaces give.
3. The warm air travels much faster (because the temperature is greater) and consequently a much greater volume of air is circulated. This is more healthful.
4. The rapid air movement insures a positive flow of heat to every room, establishing even air circulation and even temperatures.

Hall-Neal Victor Furnaces are also built to give long trouble-free service. Nothing to clog up with soot. Ash removal lightened 20 per cent or more. Write us for the name of a reliable Victor dealer near you. Ask the man who owns a Hall-Neal Victor Furnace and he will tell you it's the best home heating plant of any kind he ever had.

**HALL - NEAL FURNACE COMPANY**  
1322-32 N. Capitol Avenue      INDIANAPOLIS, IND.

*Builders of Hall-Neal Victor Furnaces for  
more than a quarter century.*



*Majestic*  
**REGISEAT**  
*HEATER*

**new!**

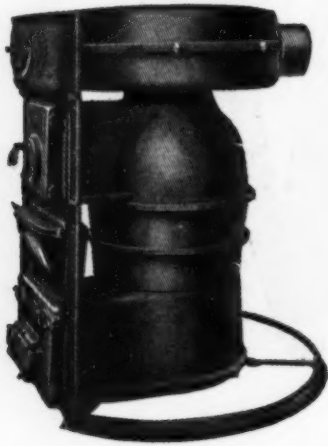
. . a really efficient and economical recirculating unit heating plant that offers you a sales opportunity you have never had before. Every dealer selling furnaces or room heaters will be interested in the two color double page announcement to be made in this magazine [February 5th issue].

**WATCH FOR IT**

When writing mention AMERICAN ARTISAN—Thank you!

# THE SECURITY

Pipe and Pipeless  
WARM AIR FURNACE



THIS wonderful line of furnaces is manufactured in one of the largest foundries west of the Mississippi river.

Made from entirely new patterns that are mounted for the very latest improvements in foundry equipment.

LOW MANUFACTURING COST enables us to ship over the entire country. Carload orders especially desired.

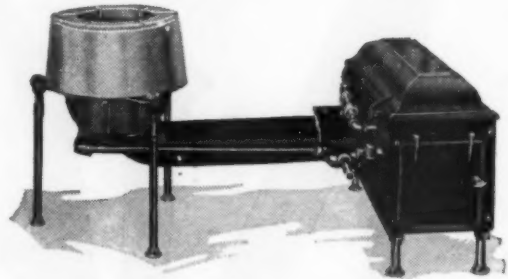
**4 SIZES NOW READY**

*Ask for Circular giving ratings based on—*

**STANDARD CODE SERVICE**

# THE SECURITY

**AUTOMATIC OIL BURNER**

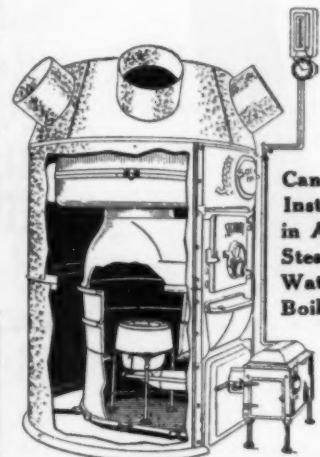


KANSAS CITY was the first large city to adopt the domestic oil burner for home heating. More installations have been made here than in any other city. Our company has been manufacturing them in large quantities for twenty years.

The Security Burner eliminates service calls. All parts of the combustion chamber are practically indestructible, but can be quickly renewed if necessary at a cost of less than \$10.00. The fire brick walls are guaranteed for five years.

The control mechanism is enclosed in a cast iron case, finished in baked-on Japan. The burner is provided with a positive gas ignition consisting of four Bunsen pilot flames, so located and protected that oil vapor does not carbonize the tips. An oil pilot can be used if desired.

The Security Burner can be operated as a natural draft burner in case the electric current is interrupted.



Can be installed in Any Steam or Water Boiler

Ask for Books Entitled The Advantage of Burning Oil and Testimony of Users

**AGENTS WANTED**

**SECURITY STOVE & MANUFACTURING CO.**  
KANSAS CITY, MO.

# Quick Heater line

THIS line is your best bet for making money in 1927. Tie up to **Quick** and you'll get furnaces that are high in quality—low in price, backed by lots of personal help from our salesmen, and quick shipments from large stocks carried at Des Moines. That's our story in a nutshell. Write for catalogue and discount sheet and get our complete proposition.

*You'll be interested!*

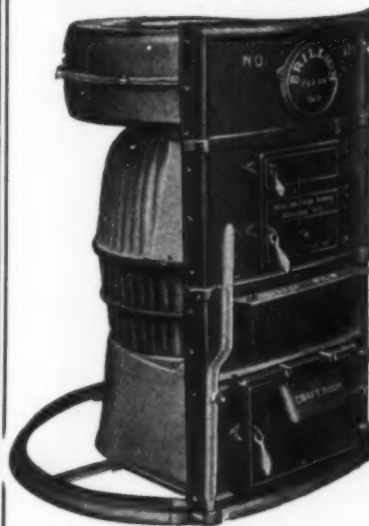
**Quick Furnace & Supply Co.**  
DES MOINES, IOWA

'Quick Heater'  
Furnaces  
Hart & Cooley  
Registers  
Pipe and Fitting  
Anything in  
the Furnace Line



The 300 Series  
"Quick Heater"  
Furnace

# BRILLION FURNACES



**Yes!**  
it  
does  
bring  
better  
profits

*And look at it—the quality and features are there too*

HERE is the furnace that enables you to sell first quality and all the while hold an attractive price ready for your customer. Look at these up-to-the-minute features—

FULL CAST FRONT  
EXTRA LARGE DOUBLE DOORS  
EXTRA LARGE WATER PAN  
EXTRA LARGE ASH PIT  
EXTRA HEAVY CORRUGATED FIRE POTS  
EXTRA HEAVY CORRUGATED DOME  
LARGE CAST CONVERTIBLE RADIATOR  
WITH Permanently Tight Joints.

Brillion dealers are growing in number right along, and their volume of business is steadily increasing.

Can you fail to investigate the furnace that was chosen by *Henry Ford* to heat hundreds of homes?

Let us tell you why there is better quality and real heating features in the Brillion at the most attractive prices you ever saw.

**Send the coupon** ➔

**BRILLION  
FURNACE CO.**

200-300 Park Ave.  
Brillion, Wis.

Chicago, Illinois  
Minneapolis  
Milwaukee  
Seattle

BRILLION  
FURNACE CO.  
200-300 Park Ave.,  
Brillion, Wis.

Send me full details and  
your new Catalog No. 60.

Name.....

Address.....





*Better quality costs no more!  
A proven fact with the*

## M E L L O W

**M**ANY years of experience in moulding superior castings enables us to put into Mellow Furnaces that extra quality of material and finish that is rarely found even in higher priced furnaces.

Mellow design and construction mean real heating efficiency.

*The  
Improved  
Heating  
Unit*

Still further  
Improved

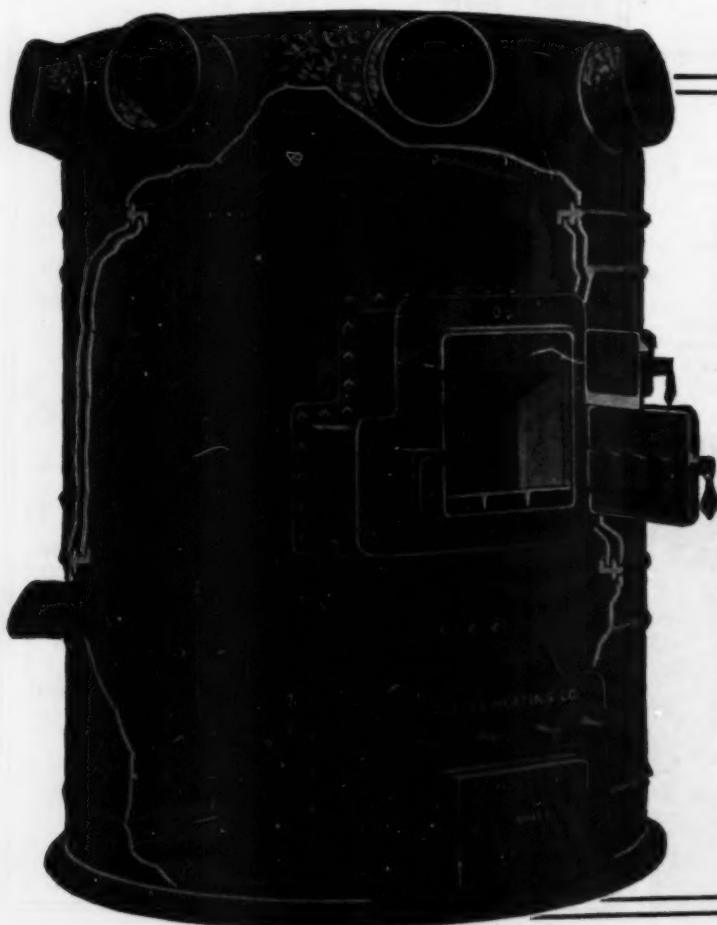
Write for catalog

**T**HIS new Mellow has greater strength—more heating surface—more refinements that put it far above its price class.

*Study the Mellow and write today  
for a truly remarkable agency offer.*

CHICAGO OFFICE, R. G. RAY, Manager  
2356 N. Clark St. Lincoln 0091

LIBERTY FOUNDRY COMPANY, ST. LOUIS, MISSOURI



**Only real quality  
can make real  
profits for you—**

**A**ND when you decide to sell steel furnaces, which you will some day, remember that the construction of the furnaces illustrated here has the features of construction that have made

## "HOME COMFORT"

### Steel Furnaces

famous favorites for over half century

True their construction has changed with time, but only when real quality features could be added. Recent improvements on Home Comfort furnaces have increased their heating surfaces and made them more efficient and economical consumers of fuel. (Notice the gas and soot consuming features shown on the feed door.)

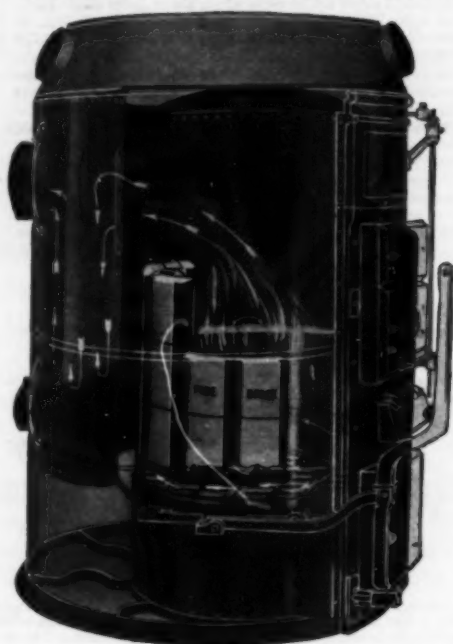
*We have a special circular called "A Dozen Appeals to Reason" which points out some of the "Home Comfort" features. Write for it today.*

**ST. LOUIS HEATING CO.**

**2901-11 Elliot Ave., St. Louis, Mo.**

PITTSBURGH DISTRIBUTOR  
Wagener Bros., 3605 East Street

## THE TRIUMPH OF AMERICAN PROGRESS



### *The New* **PEERLESS**

**M**ORE improvements are embodied in this warm air heater than have been made in the entire history of the warm air heating industry.

Our new catalog, just off the press, will tell you all about it.

**NOW** is a good time to hook up with Peerless  
—*there'll be miles of smiles for 1927.*

**THE PEERLESS FOUNDRY CO., INC.**

1855 Ludlow Ave.

Indianapolis, Ind.

*(Oldest steel furnace city in the U. S.)*

**COL-BURN**

## IMPROVED BOILER PLATE FURNACE



*(Patent Applied For)*

*Welded Gas, Soot and Oil Tight*

**H**IGHEST quality—in material, workmanship and design.

Automatic Feed Door (patent applied for) which opens direct damper automatically when feed door is opened. Direct damper can also be opened by hand when feed door is closed.

Standup Shaker.

Extra large water pan with hinged cover.  
3-16" Boiler Plate arc welded.

Guaranteed 10 years.

Write now for exclusive agency.

*1927 Catalog and prices on request*

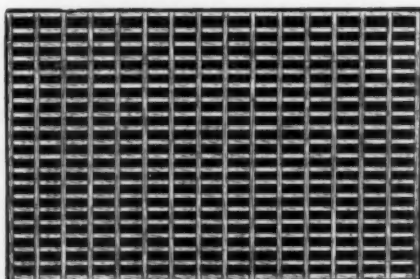
**COLBURN HEATER CO.**

1955-75 N. Long Ave.

Chicago, Ill.

## Leadership

*For Over  
20 years*



*makes these fine*

# AMERICAN WOOD REGISTERS

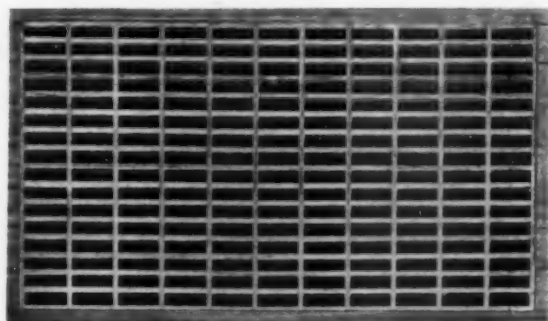
*your best choice*

**H**ERE are some of the reasons why AMERICAN WOOD REGISTERS have held the foremost position for over 20 years.

1. We are specialists—we make nothing but AMERICAN WOOD REGISTERS.
2. We use the highest grade wood used in any stock wood register.
3. We employ men of long experience and use the finest type of machinery.
4. Every AMERICAN WOOD REGISTER passes a rigid examination before leaving the factory—every one you receive is perfect and ready for installation.
5. AMERICAN WOOD REGISTERS are not only accurate and strong but exceptionally good looking.
6. We give prompt service and our prices are never high.

*Just get our catalog and prices. Try  
AMERICAN WOOD REGISTERS  
now and see how much better they are.*

**THE AMERICAN  
WOOD REGISTER CO.**  
PLYMOUTH, IND.



## McClure Wood Registers *are better*

**T**HEY are made of high quality lumber and finished smooth to match the finest interior.

*We make nothing but Wood Registers—  
every McClure is fully guaranteed.*

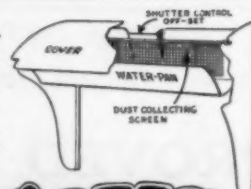
**N**OT made from left overs of other operations but built specially for high grade installations. McClure Wood Registers are made for all purposes—Floor Registers, Ceiling Ventilators, seat fronts, stair rakes and stair risers. Made in the wood you specify and carried in large stocks for prompt shipment.

*Write today for folder and prices.*

**McClure Builders Supply Company**  
East Palestine, Ohio

**T**HIS illustration shows the construction of the Tayco Register Shield.

You can sell dozens of Tayco Register Shields right now.



*A Beautiful  
Display  
Easel  
FREE  
with order  
for 1 dozen*

**Tayco**  
REGISTER SHIELD

**E**ASILY fastened to register by means of 2 wire hooks. No tools needed.

Fits 90% of all standard Wall Registers.

*Finished  
Black Body  
and  
Oxidized Cop-  
per Cover*

### Air Cleanser and Humidifier

**T**HE Tayco is practical—it deflects the heated air to the floor—cleanses the air and moistens it. A screen is also provided to catch the dust.

*Retails for \$2.50. Write for quantity discounts.*

**TAYCO REGISTER SHIELD CO. - Menasha, Wis.**

*Here is the Humidifier that leads them all.—Simple, durable construction of cast iron, galvanized—sets on top of any make of furnace—easy to install—easy to sell, guaranteed to please or money back.*



**HEALTHFUL — ECONOMICAL  
FOOL-PROOF — SAFE  
AUTOMATICALLY SUPPLIED  
REGULATED EASILY  
ATTACHES TO CITY WATER  
100% EFFICIENT**

**The HUMIDAIR is the only Humidifier on the market having a Patented Hygrometer and sight feed regulating automatic water supply.**

*Sell the HUMIDAIR Now. There is a big demand and large profits waiting. Write today for complete details, illustrated circular and price. Makes sick furnaces well.*

**J. ROEMER HEATING CO.**  
THE BUILDERS' EXCHANGE CLEVELAND, OHIO



# BOOMER

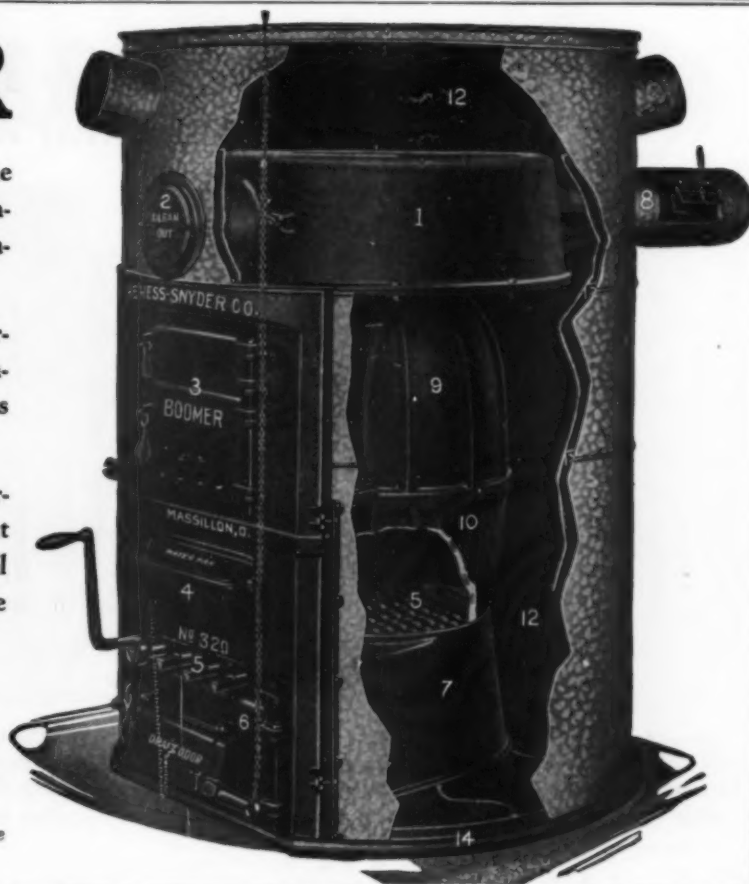
**T**HIS is our latest addition to the Boomer line. We heartily recommend it for your favorable consideration.

The severe tests we have given this furnace have proven its durability. The unsolicited reports we received from users last winter have been most flattering.

For durability, economy, easy to operate, easy to set up and the low price at which we offer this furnace, you will make no mistake in arranging for the agency.

**THE HESS-SNYDER CO.**  
MASSILLON, OHIO

Makers of BOOMER FURNACES for Forty-Three Years



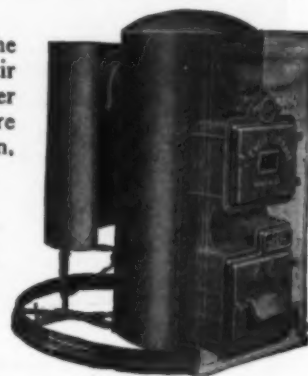
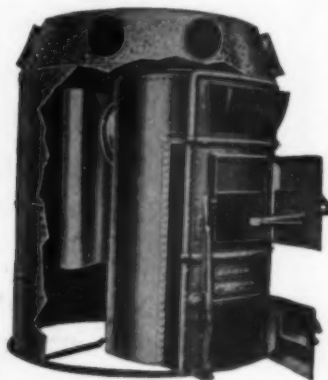
## Standard Dealers Know in Advance



9 styles and 47 sizes of steel and cast iron furnaces carried in stock at all times. Nowhere else can you find such a variety to select from.

They are sufficient to meet demands from all classes of trade.

**T**HAT every buyer will become a Booster. The furnaces shown on this page have proven their ability to return dollar for dollar to the consumer in extra service rendered. Standard Dealers are also assured of real profits by our Dealer Plan, which is different.



Furnace Supplies, such as the following, are nationally known as the Standard of Comparison;

HANDY PIPE & FITTINGS  
R I NO STREAK REGISTERS  
H & C No. 170-No. 190 REGISTERS  
STAN-CO REGISTERS  
STEEL & SEMI STEEL REGISTERS  
WISS SNIPS  
PEXTO TOOLS

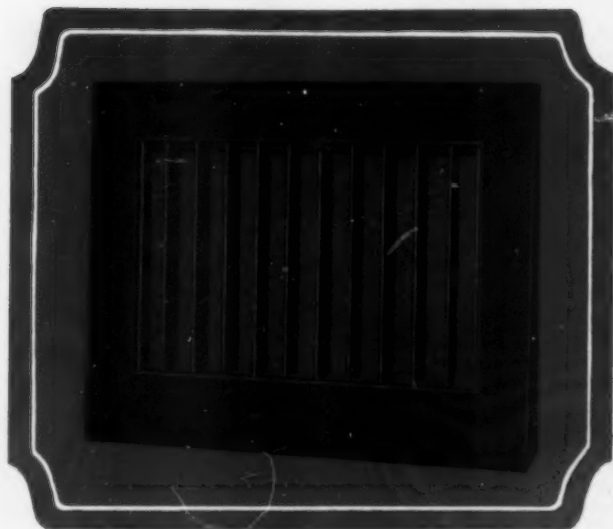
*Everything needed by the Furnace Installer*

**STANDARD FURNACE & SUPPLY CO.**  
OMAHA, NEBR.

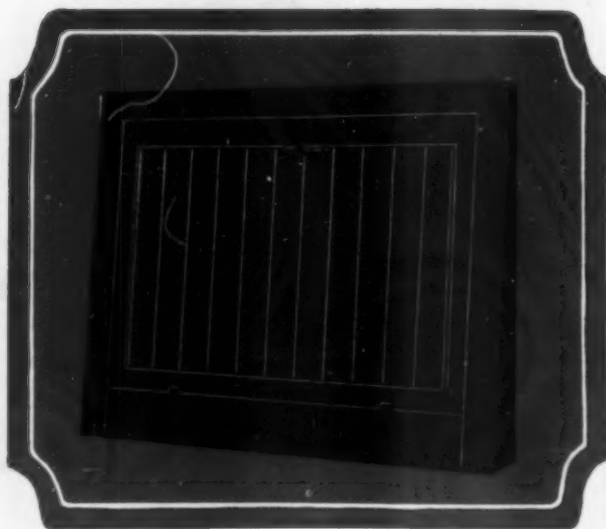
Warehouse — Sioux City, Ia.

# New Standard

## STEEL BASEBOARD REGISTER

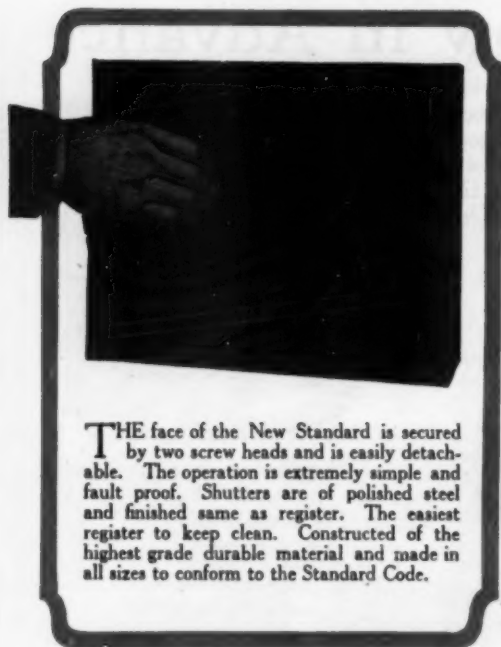


*Shutters Open*—The illustration above shows the New Standard with shutters open. Notice that this exclusive design allows full capacity with least possible resistance.



*Shutters Closed*—The illustration above shows the neat attractive appearance of the New Standard when shutters are closed. It presents an especially clean and decorative appearance.

*Nothing like it on the market* ↗



THE face of the New Standard is secured by two screw heads and is easily detachable. The operation is extremely simple and fault proof. Shutters are of polished steel and finished same as register. The easiest register to keep clean. Constructed of the highest grade durable material and made in all sizes to conform to the Standard Code.

THE Standard Code brought out the inspiration for this efficient register of new design.

And it is growing more popular each day as is the Standard Code itself.

Full capacity of free air flow is assured and at the same time the design allows easy and positive operation.

The New Standard is a register that pleases. It will help you make better sales.

It conforms to the Standard Code in sizes and principles and can be had in all standard finishes.

*Write for attractive prices—the New Standard is fully guaranteed—have us send you our latest catalog.*

# Waterloo Register Company

Waterloo, Iowa

Seattle, Wash. Office 2211 1st Ave.

# Are YOU tired of cut-price, no-profit FURNACE JOBS?

## *A new day has arrived!!*

**N**O matter where you go, you hear furnace men talking about the new day that has come in the furnace business.

You used to hear nothing but kicks on the other fellow's prices, or his work. No profits used to be the talk. Men were weary, discouraged, blue. Now it's a different story.

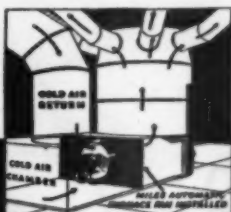
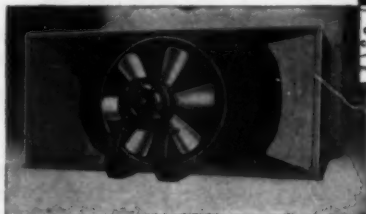
Everywhere Furnace dealers are working with new courage, new heart, new enthusiasm, a new go-get-em spirit and with a new sense of co-operation. They're finding out that there is plenty of profit in the furnace business when

you sell service based on b.t.u.'s instead of castings by the pound.

And the key to the new door of new and more profitable sales is "Forced Air" through the Miles Automatic Furnace Fan. Forced Air means the ability to heat any home adequately.

Instead of looking for business only among the highly competitive moderate homes, now the wide awake furnace men are also selling guaranteed heating performance to the fine new big residences and churches, getting jobs that run up to \$4000.00 and more.

Miles Automatic  
Furnace Fan  
with Fan idle—  
louvers open



Showing general  
idea of installation  
permitting alternating  
gravity and  
Forced Air System



Miles Automatic  
Furnace Fan  
with louvers  
closed—fan in  
operation

And these same furnace men are getting contracts for heating stores, foundries, mills and garages, because "Forced Air" removes nearly all limitations from furnace service. Length of pipe run is no longer a barrier to satisfactory service. Successful Forced Air heating is made possible by means of the Miles Automatic Furnace Fan with its automatic by-pass louvers. Have you got one working for you?

### **Cure Sick Furnaces with the Miles Automatic Furnace Fan**

*You'll be hearing of cold rooms, hot cellars, sluggish air circulation, big fuel bills this winter. Do you know that you can CURE THESE jobs and make good money by installing a Miles Automatic Furnace Fan?*

If you are tired of cut-price, no-profit jobs, start selling "Forced Air".

Get a demonstrator. If you have a demonstrator you can show and convince your prospects. That means sales. We suggest you order a No. 800 fan for demonstrating equipment. Write us if you want more business.

THE WARM AIR FURNACE FAN COMPANY, 6521 Cedar Avenue, Cleveland, Ohio

# MILES AUTOMATIC FURNACE FAN

MAIL  
THIS  
TODAY

THE WARM AIR FURNACE FAN COMPANY  
6521 Cedar Avenue, Cleveland, Ohio

Kindly send me complete information about the Miles Automatic Furnace Fan.

Name \_\_\_\_\_

Address \_\_\_\_\_



# STEARNS REGISTER



*P. 16*

*By J. N. C. Trade  
for  
The Public*

Heating Capacity —  
Strength —  
Attractiveness —

*100 percent*

*made right  
of heavy materials*

*very neat  
and will stay  
that way*

## This Improved STEARNS

THE openings are larger to allow 100% Free Air Capacity, yet neither strength nor attractiveness have been sacrificed.

It has a perfectly balanced design—the neatest register you can find.

It comes in all standard sizes and finishes.

The operating device used is an exclusive feature of this Improved STEARNS Register.

STEARNS register is the only one on the market that does not rely on springs or tension to be effective. This device is extremely simple yet most efficient. It is fully covered by patents—that's why it is **not** on any other register.

STEARNS finishes are of the highest quality. All the regular electro-plated finishes can be had and also the popular lacquer finishes such as Brush Brass, Antique Brass and a perfect replica of Oxidized Copper. All lacquer finishes sell on same list price as White Japan.

Our new factory has increased our production facilities. Let us tell you how our selling plan saves you money.

**Write today for catalog, a sample and our prices**

**STEARNS REGISTER COMPANY**

1234 Mt. Elliott Avenue

Detroit, Michigan

*When writing mention AMERICAN ARTISAN—Thank you!*

# Different From All The Rest!

## SYMONDS MISSION REGISTERS

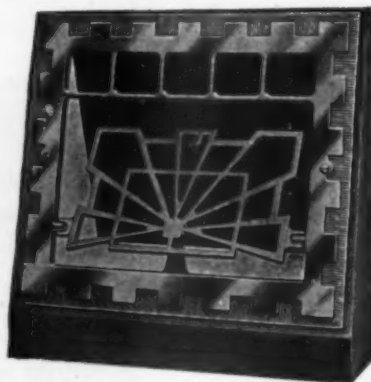
WILL HELP YOU RETAIN YOUR  
IDENTITY IN YOUR LOCALITY

PLAN NOW TO INCREASE YOUR BUSINESS WITH A  
**Register That Has The Combined Feature Of  
BEAUTY AND PERMANENCE**

A REAL FINISHING TOUCH TO YOUR INSTALLATION WITH A LASTING VALUE

### EFFICIENCY

You will agree with us, to eliminate discoloring of the wall it is necessary to apply additional methods other than a mere flange, our line provides for this, also for variation of plaster. Full capacity due to the movable grille, quickly installed with our labor-saving, patented fastening device.

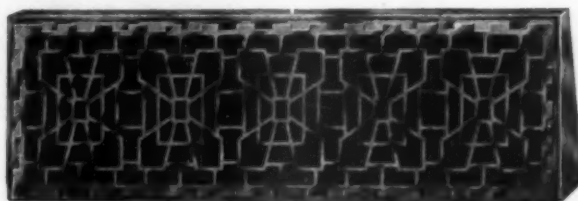


A Size for Any Requirement

### FINISH

All standard electro plated (no extra price for brass and nickel plated). It will pay you to get acquainted with our SY-MO-LAC finish, costs less than electro plated, more attractive than black japanned, very durable, will stand the most severe test.

9 x 30  
COLD AIR INTAKE  
TO MATCH THE  
REGISTER



CAPACITY FOR TWO  
STANDARD SPACES  
2 x 10 JOIST, ALSO  
ONE SPACE AND  
OTHER SIZES

### SALES AND SERVICE

Jobbers most everywhere carry our line, or direct shipments, prompt and efficient service from this city surrounded by the United States. Let us serve you with a register that has built up business for others. The price is right, extra discounts for various quantities. A free sample to those legitimately interested.

WE INVITE YOU TO BE INCLUDED WITH OUR MANY  
SATISFIED CUSTOMERS. SEND FOR CATALOG AND PRICES

**SYMONDS REGISTER CO., 3117-23 MINNESOTA AVE., ST. LOUIS, MO.**

**Dealers who want to be  
sure of high quality  
usually choose**

# Walworth

## REGISTERS

### ---the complete line

**T**HE Walworth line is complete, up-to-date—meeting all present day requirements for quality, size, finish and price.

#### NEW STANDARDIZED STYLE B BASEBOARD REGISTER

**A** BIG FAVORITE because of substantial construction and attractive design. All popular finishes and standard sizes.

#### WALWORTH SEMI- STEEL REGISTERS

#### VENTILATORS

#### BORDERS

#### SIDE WALL REGISTERS

#### FURNACE CASING RINGS

#### WALWORTH DOUBLE GRATINGS

(Made in Seven Sizes)

Write today for  
the Walworth Catalog



### —for example—this Walworth Wood Grain Floor Register

**R**EAL quality, and it can't be beat for looks. The finish stays on, because it is dipped and baked, which produces a very superior finish.

It comes finished in Oak, Black Enamel or other Standard Finishes—it will not rust.

Practical design of course and extra heavy. The new positive action operating device does not become weak and it cannot get out of order.

Complete stocks at all the below listed  
addresses --- write for price list today

### THE WALWORTH RUN FOUNDRY CO.

West 27th St. & N.Y.C. & St. L.R.R., CLEVELAND, OHIO

#### DISTRIBUTORS

ROBINSON FURNACE CO., Chicago, Ill.

HART MFG. CO., Louisville, Ky.

PHILLIPS & BUTTERFF MFG. CO., Nashville, Tenn.

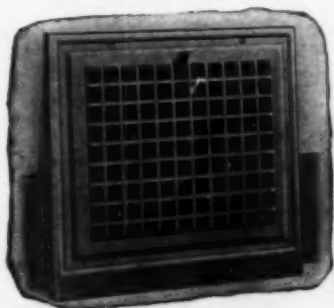
#### EASTERN REPRESENTATIVE

PENN TINSMITH'S SUPPLY CO., Philadelphia, Pa.

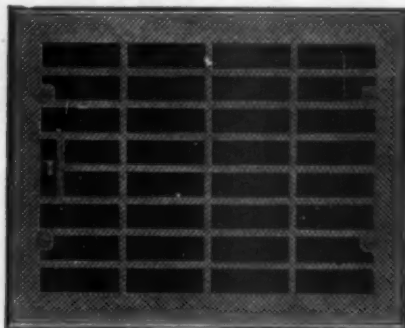
See you saw it in AMERICAN ARTISAN—Thank you!



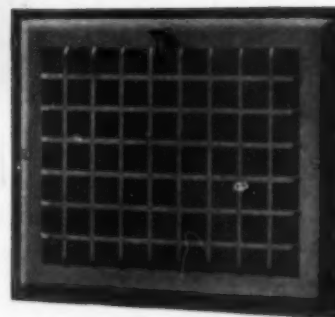
## Registers that make good for you



Style 901. New—baseboard register with positive center movement. Guaranteed POSITIVE.



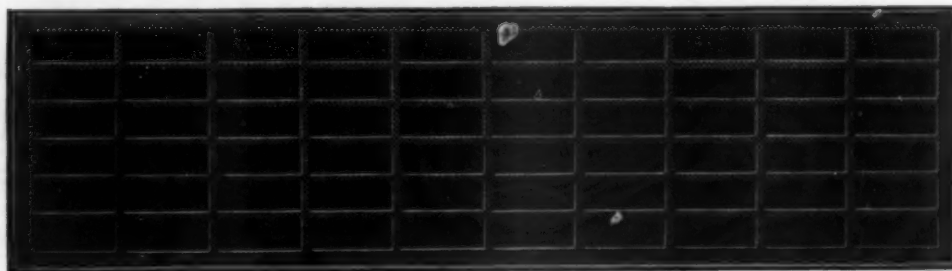
Style 80. Cobble. A popular floor register that helps sell your furnaces. Finished in Black Japan and Tanbo Antique.



Style 39. Latest Wafer. One way. Vertical is style 41. Positive center movement. Try our new Tanbo finish.

**I**N our plants we make cast, semi-steel and all-steel Registers. They embody every known improvement and economy of the most modern methods of manufacture. We have registers that meet every need. Special attention has been given to the matter of designs and finishes resulting in registers that are pleasing to the eye. Every register we sell, we make! You can recommend them! We stand back of you with our known reputation for service and satisfaction. Write for complete information and prices.

Style C. Cobble Cold Air Face. Rapidly becoming the standard Intake.



### TUTTLE & BAILEY MFG CO.

*Makers of Registers and Grilles for 80 Years*

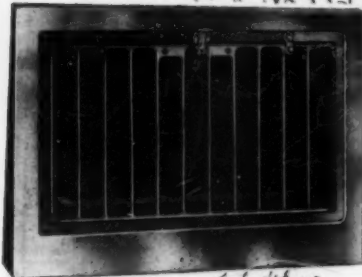
441 LEXINGTON AVENUE  
NEW YORK CITY

36 Portland St., Boston  
704 East 18th St., Kansas City

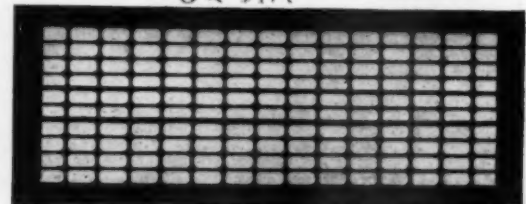
1123-29 W. 37th St., Chicago  
Bridgeburg, Ontario, Canada



Class 200  
Floor Register

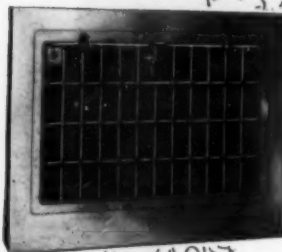
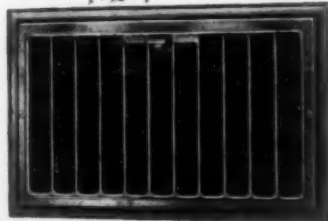


Class 170  
Baseboard  
Register

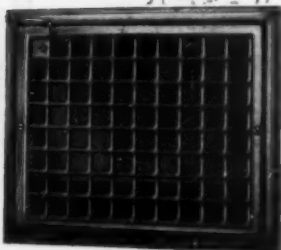


Class 255  
Intake

Class 370  
Side Wall  
Register



Class 150  
Baseboard  
Register



Class 345  
Side Wall  
Register

## New Year Greetings

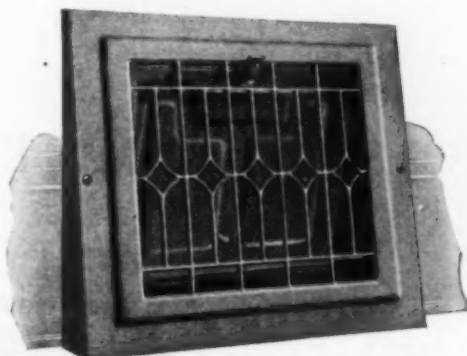
Once again it is our pleasure to wish a full measure of happiness and prosperity to our friends old and new.

*The Hart & Cooley Mfg. Co.,*

New Britain, Conn.

New York — Chicago — Philadelphia

You will want to use the *New Independent Base-Board Registers* because the very features you like best are built into them.



If larger than usual open area—

If attractive and distinctive design—

If simple and permanent valve adjustment—

If ease of installation—

If excellent finish—

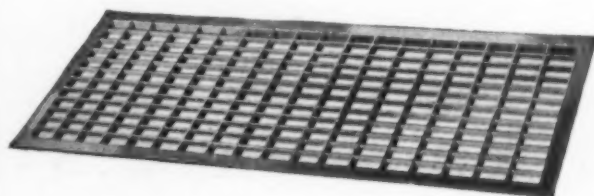
Whichever is of most importance—

You will find all of these features in the *new Independent*.

Made in all leading sizes and in varying flange depths for base-board and above base-board use.

Yes, you *want* the new Independent!

When it comes to Cold Air Faces there really is no argument—"Fabrikated" with its 82% open area *Is It!*



They will not break.

They are rigid.

And they have 82% open area. This means that only 18% of the size of face is obstructed by the cross bars, the entire balance being open and free for the air to pass through.

Smaller sizes may be used. This economizes in floor space; *the first cost is less.*

"Fabrikated" can be furnished in any size; the most popular finish for cold air returns being imitation oak, at a price but a trifle more than black japan.

You certainly should look into "Fabrikated!"

## INDEPENDENT REGISTER AND MFG. CO.

3741 East 93rd Street

CLEVELAND, OHIO



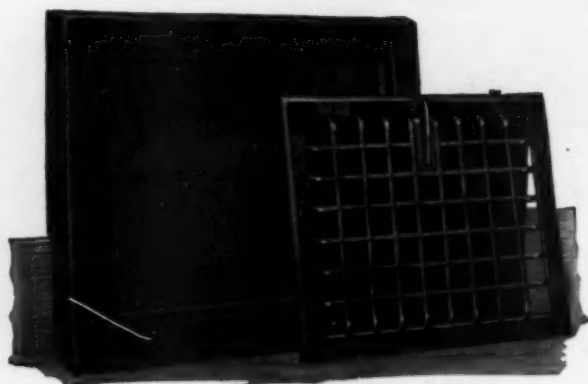


"The Economy"



"The Aristocrat"

## Ye Registers for Ye Aristocrat

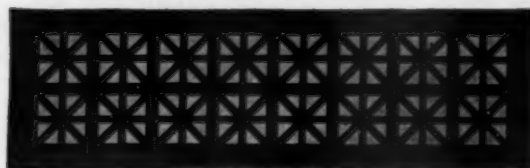


"The Colonial"

*Register Book No. 27 just off the Press  
Worth having—Send for Your Copy*

### *The Aristocrat*

New Model One Piece Baseboard Register—Built on the Square. Conforms to the standard in sizes, depths of flanges, height from floor to box opening.



Wrought Metal Grilles—Made in  
Many Designs

for Radiator Enclosures  
and ventilating purposes

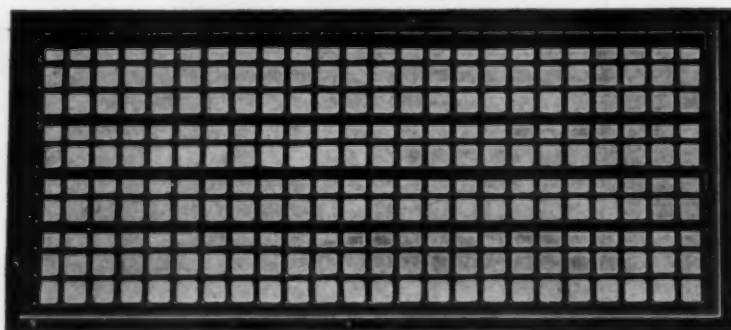


Fig. T Face

### *Fig. T*

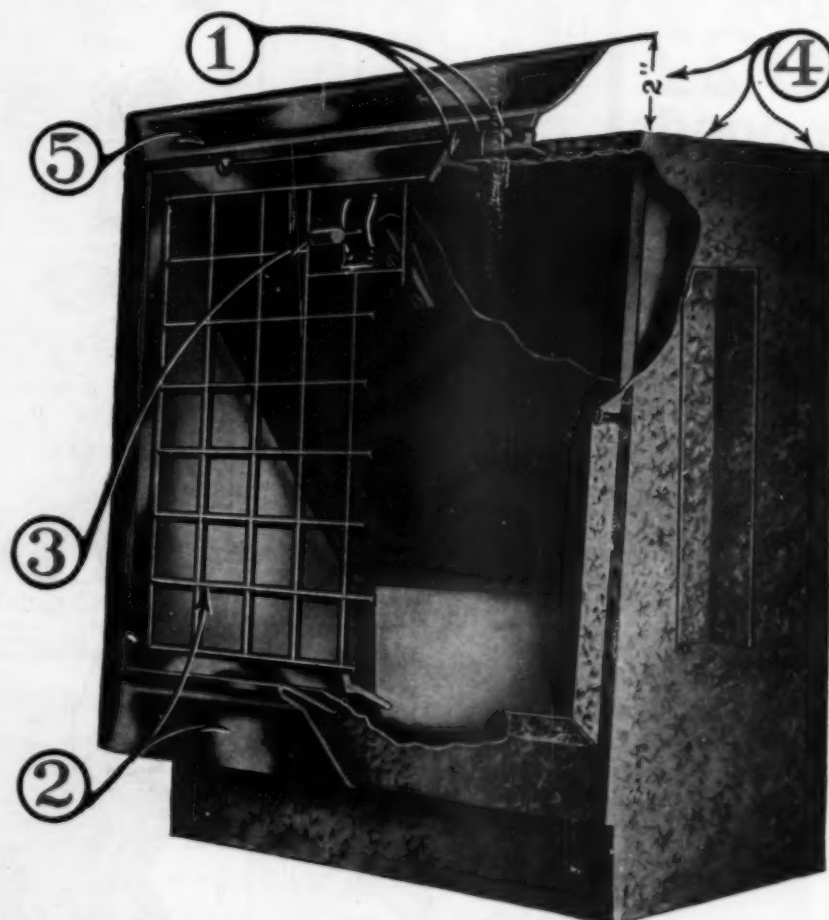
Specially constructed  
steel Cold Air Face  
made in practical sizes

All our Baseboard Registers are equipped with Auer Patented, Permanently Perfect Operating Adjustment and have **22% Greater Air Opening** without sacrificing the Protective, Decorative and Concealing Purposes of a Register

**The AUER REGISTER CO.,**      **Cleveland, Ohio**

## Select Your 1927 Registers on the Basis of Dealer and Owner Service

*Special Features Found Only on No Streak Registers*



## The No Streak is the Only Guaranteed Register

- 1 Patented Expanding Slip-Joint connection all around the Box which prevents the Air from Escaping and Streaking the Walls.
- 2 Steel Frame and removable Steel Grille having Over Capacity Free Air Opening for discharging full capacity of Pipe.
- 3 Malleable Lever, easily operated by hand or foot. Positive in Operation. Trouble-Proof and Everlasting.
- 4 Galvanized tin-lined Box, having Floor line, Wall line and Recessed Top Collar for easy and accurate setting. Note 2-inch trimming space around box for quick and perfect setting of register.
- 5 Grille easily fastened or quickly removed for cleaning. It is only necessary to remove two large oval head bolts.

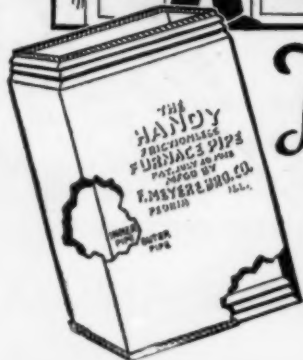
*Being Guaranteed They Are Permanently Satisfactory, Therefore Cheapest in End.*

**ROCK ISLAND REGISTER CO.**  
ROCK ISLAND, ILL.

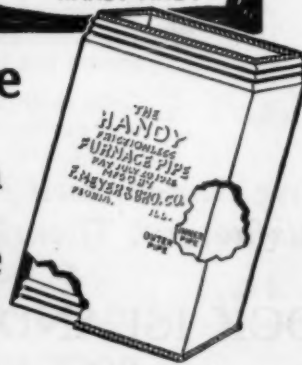
*Mail This Coupon Now!* A.A.  
**R.I. Register Co.**  
Rock Island, Ill.  
Send me your complete catalog and price list.

Name \_\_\_\_\_  
Address \_\_\_\_\_

<p><b>HANDY PIPE AND 1927 look good to Handy Andy</b></p>	<p>Handy Andy has always used Handy Pipe</p> 	<p>He considered it best because he made money using it</p> 
<p>He knows the new frictionless features make it <b>BETTER</b></p> 	<p>No "choking" insures free passage of warm air to every room</p> 	<p>The new spring clip makes a lock never double that slips</p> 
<p>Assuredly what was <b>BEST</b> is now even <b>BETTER</b></p> 	<p>He knows the Meyer reputation for Service</p> 	<p>1927 looks good to him too.</p> 
<p>He thinks it will be a bigger year than 1926</p> 	<p>He resolves to use Handy Pipe on every job in 1927</p> 	<p><b>Handy Pipe means more Profits and Pleased Customers in 1927</b> HANDY ANDY</p>



**The HANDY PIPE people**  
(F. Meyer & Bro. Co.-Peoria, Ill.)  
are a mighty good bunch  
to tie to in 1927 for  
everything needed in the  
installation of Warm Air  
Furnaces







No. 48. 48" Long  
Excelsior Self-Locking  
Double Wall Stack



A No. 1 Stack Head  
For Baseboard Register



No. 208 Boot  
For Baseboard Stack Head



**E**ACH and every year something new and something better. That's progress.

**C**ONSTANTLY striving to improve where improvements are possible: creating new items to lessen work and help the industry: bearing in mind the interest of the trade and its heating problems at all times. *That's our cheerful task.*

Pledging ourselves each and every year to the careful observance of the needs of the trade: to furnish unequaled merchandise and service at commensurate prices. *That's our pleasant duty.*

Our catalogs are replete with illustrations of items originating with us. Practical innovations which have stood the test of time. To itemize is impossible. *As a whole the finest and most complete line of Furnace Pipe and Fittings.*

*Not what of tomorrow, what for 1927? Illustrated on this page you see our latest contributions.*

Our new 48 inch section of Self-Locking Double Wall Stack reduces almost to the vanishing point the labor of stacking either new or old houses. Two of these sections with one of the various short lengths illustrated in the Excelsior catalog and the stack is complete. Any length stack now commonly required can be made from just three sections. *Labor—practically nothing—no solder required—Excelsior Self-Locking Double Wall Stack.*

Write for our New 7D Catalog

**THE EXCELSIOR  
STEEL FURNACE COMPANY**

118 S. Clinton St.

Chicago, Ill.

When writing mention AMERICAN ARTISAN—Thank you!

# MARSH

## WOOD FACES

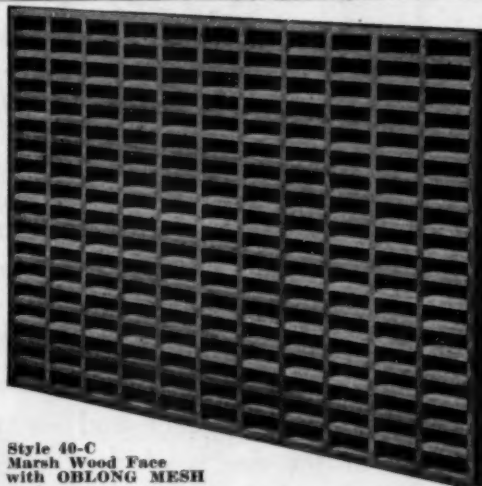
*You'll find them  
in the best homes*

DEALERS who want to be sure of every part of the installation usually choose MARSH WOOD FACES because they can rely on them.

They know that *Every One* is unusually strong and well made.

Correct design, the best selected wood obtainable and expert workmanship are Marsh features.

The use of up-to-date machinery means large production as well as accuracy in manufacture and that means a better price.



Style 40-C  
Marsh Wood Face  
with OBLONG MESH

You will find this Style 40-C an unbeatable design. Cold Air Wood Faces require special care in manufacturing to enable them to stand up under use—Marsh Wood Faces insure satisfaction on every installation.

*Made in all standard and special sizes*

YOU can put a MARSH wherever a rich, attractive, wood face is required.

MARSH WOOD FACES are very popular for use in Pipeless installation. Above the doors, in the ceiling, and in the baseboard MARSH WOOD FACES are better. They are more economical and harmonize better with the woodwork.

Write today to your Jobber or to us for complete catalog—all leading jobbers sell MARSH WOOD FACES.

**The Marsh Lumber Company - - Dover, Ohio**

Satisfy your customers and yourself by using these perfect, neat appearing guaranteed

*Eaglesfield*

## WOOD FACES

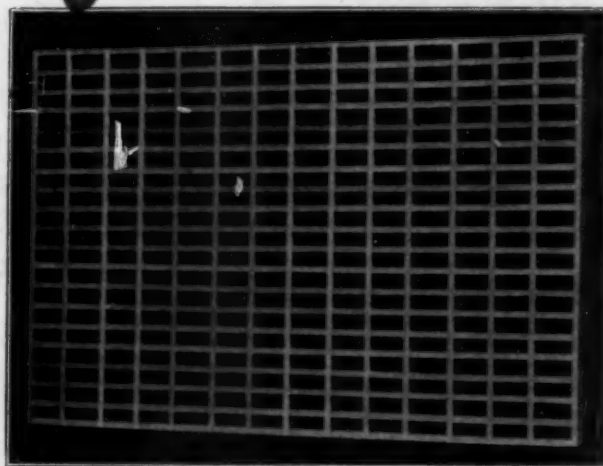
THE best the market offers—at prices no higher than others.

Made from the finest grade of white oak and by the most expert workmanship.

Large  
Free Air  
Capacity

Neat Appearance

Extra Strong



Cross pieces  
3/8 inch deep

Openings  
1-5/8 inch by 7/8 inch

Write for  
prices today

**EAGLESFIELD VENTILATOR COMPANY, "The Sudden Shippers"**  
916 Dorman Street INDIANAPOLIS, INDIANA

Mention AMERICAN ARTISAN in your reply—Thank you!

The Quality Pipe of

# Kwik-Lok

FURNACE PIPE  
AND FITTINGS

Mechanical Perfection

## Something Brand New!

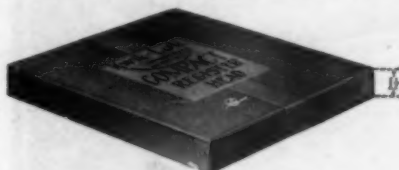
### The Kwik-lok Compact Register Head

This new Dunning creation is now ready for the trade. They can be assembled permanently and rigidly ready for installation in less than three minutes time without tools. Kwik-lok Compact Heads cost no more.

8 to 1

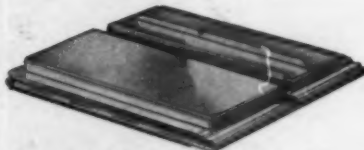


Kwik-lok Compact Heads are cheaper to stock, cheaper to ship, yet they cost no more.



Each head packed individually, fresh, clean and undamaged in a separate carton only 1½" deep.

**Save Your Valuable warehouse space**



Kwik-lok Compact Head as it appears when removed from the carton.

Kwik-lok Compact Heads occupy only one-eighth as much of your warehouse space.



Kwik-lok Compact Head ready for assembling. Side pieces securely hinged to back. Top and front ready to snap in place.

**Manufactured for all Makes of Registers.**

Dunning originated the spring self-locking device for double wall pipe—Dunning created the Kwik-lok Adjustable boot—and now Dunning has created the Kwik-lok Compact Head. Kwik-lok fittings sold by the best jobbers everywhere.

PATENTS PENDING



Kwik-lok Compact Head with top in place ready for front to be added.

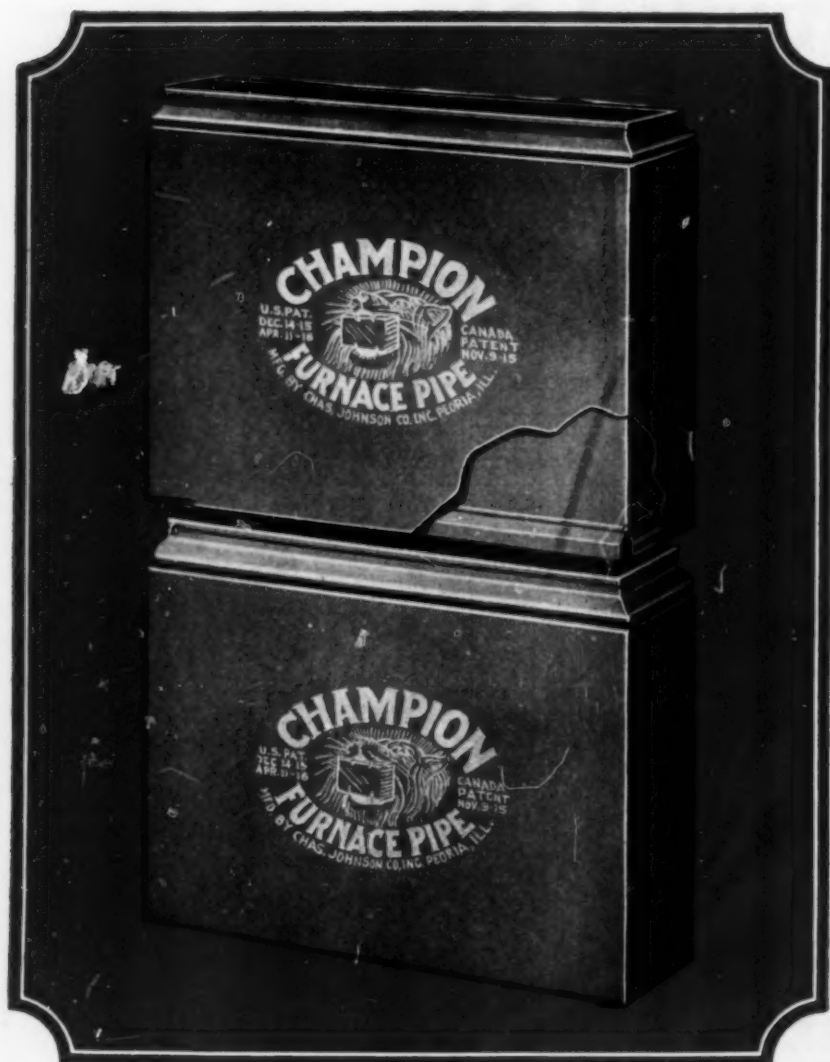


Kwik-lok Compact Head completely assembled more rigid than the old style head. Ready for installation.

## E. C. DUNNING, INC., Milwaukee, Wis.

Say you saw it in AMERICAN ARTISAN—Thank you!





THIS photograph shows how securely the double lock joint locks the two sections of Champion pipe together. Two strong men, pulling with all their strength, try in vain to pull the sections apart.



IN this photograph the young man shows them how easily it can be done (when ever it becomes necessary) simply by pulling at one of the corners, thereby disengaging the double lock joint.



Send for  
This New Catalog

**C**HAMPION Double Wall Pipe means less time and more profit for you on each installation—and a more satisfactory heating plant for your customer. The double lock joint—an exclusive feature of Champion pipe—not only eliminates soldering, but gives a more rigid and substantial pipe. The inner and outer walls are double seamed together at both ends. There are no milled edges. Practical furnace men pronounce it the smoothest and most rigid double wall pipe made.

Our large production facilities enable us to give you prompt service, no matter how large your requirements, and to quote you prices that will make you real profits.

*Our 1927 Catalog of pipe and fittings will be sent on request.*

**Chas. Johnson Co., Inc., Peoria, Ill., U. S. A.**

**DEPENDABLE**  
**PROMPT SERVICE!**

**TIN PLATE**

for  
Warm Air Heater  
Pipe and Fittings  
Large Complete Stocks  
of  
Diversified Sizes

at  
**CHICAGO  
PITTSBURGH  
NEW YORK**

**TIN PLATE**

**C. S. DAVIS AND COMPANY, INC.**  
37th and Iron Streets CHICAGO, ILLINOIS

**TIN PLATE**

Warehouses at **CHICAGO - PITTSBURGH - NEW YORK**

Established

1902



**Use this pipe—it has satisfied thousands for almost a quarter century.**

**I**T takes first quality material, the best machinery, expert workmen plus experience to make good furnace pipe.

CHICAGO Pipe is that kind—the kind you like to work with because it is *Quick, Strong and Accurate.*

It *fits and stays set* and when you examine its fine quality you'll see why it's such a big favorite.

**Fair Prices and Lightning Service on the most complete stock of furnace supplies.**

Our furnace supply service is accurate and reliable. We have in stock practically every known item in furnace accessories. We want to add **YOU** to our big list of regular and satisfied customers. Here are some of the specialties we carry:

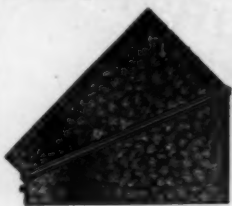
*Registers—Dry Paste—Ventilating Faces—Wood Faces—Furnace Chain—Cast Dampers—Asbestos Cement—Speco Sal Ammoniac—Furnace Regulators—Galvanized Iron and Tin Sheets—Tinned Rivets—Sheet Metal Screws and Stove Bolts.*

**Write today for our catalog No. 22—the right kind of service has built this large business—order from our catalog—you will be satisfied.**

#### BETTER COLD AIR ELBOWS

##### With These Features—

All Chicago Cold Air Elbows above 14 inches are made only in standard 26 and 24 gauge **FIRST** quality galvanized iron. A new improved edge or bead and our special Adjustable Clip makes adjusting easy and quick. You need **CHICAGO COLD AIR ELBOWS** for speed and better results—order from our catalog.



Local dealers and those in nearby towns—for rush orders phone Private Exchange Lincoln 5136 and 5137

**CHICAGO FURNACE SUPPLY COMPANY**

1276-78-80-82 Clybourn Avenue

**CHICAGO, ILLINOIS**



Free Air Capacity  
in Jones National and  
International Registers.

The Face Capacity  
Exceeds the Throat  
capacity which exceeds  
the Pipe Capacity.

*And the Beauty is not  
Sacrificed.*

# The STANDARD CODE says →

## REGISTERS

Section 7. (a) When base-  
board or wall registers are  
used, they shall be properly  
and permanently attached  
to the stack head in such a  
manner that will prevent  
any leakage of air between  
the head and the register.

# JONES- NATIONAL REGISTERS

Center is  
held in  
place by  
two Lugs  
in here

A Patented SEALING  
STRIP that SEALS the  
JONES - NATIONAL  
REGISTER to the box.

Fastens and Seals  
Tight to the Register  
Box (*not to the  
studding*) Comply  
with the Code  
Completely.



## Once a "USER" of JONES-NATIONALS always a "USER"

### UNITED STATES REGISTER COMPANY BATTLE CREEK, MICHIGAN

Branch Houses: Minneapolis, Des Moines, Kansas City, Albany. Supply Houses Everywhere.

# Sample pages from a book you will want

Send for a copy of "COPPER FLASHINGS"

There's  
no  
charge

**COPPER & BRASS  
RESEARCH ASSOCIATION**

25 Broadway - New York

## SPECIAL NOTES

(REFERRING TO ILLUSTRATIONS ON OPPOSITE PAGE)

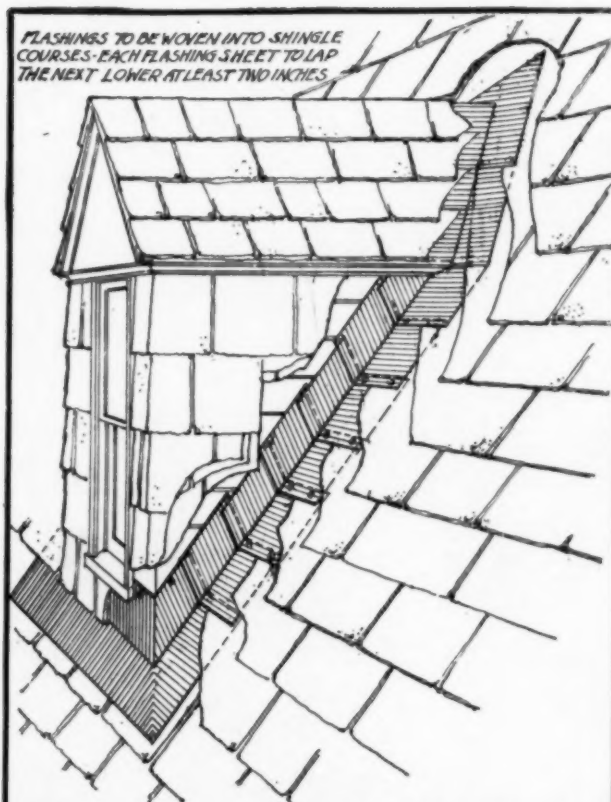
**Fig. 1. The flashing for a dormer window** covered with shingles and on a shingle roof is shown in Fig. 1. Flashing sheets should be so placed that each sheet will lap the one below at least two inches and be separated by one shingle thickness. Sheets should extend up on the walls at least four inches and be nailed near the top with one or two copper nails as shown. Flashings will not be visible on the roof or walls except on the roof below the front wall where they lap over the top of the shingles four inches. Care should be taken to see that each sheet extends above the shingle on which it rests so it may be nailed without puncturing the shingle.

**Fig. 2. A chimney on the slope of a shingle roof** is shown in Fig. 2. The base flashings on the roof are formed and fastened as in Fig. 1. This method is better than that shown in Fig. 4. Cap flashings

should be built in as the chimney is constructed and stepped as required by the slope of the roof. They should be built into the joints of the brick work about two inches. Each sheet should lap outside the one below at least two or three inches.

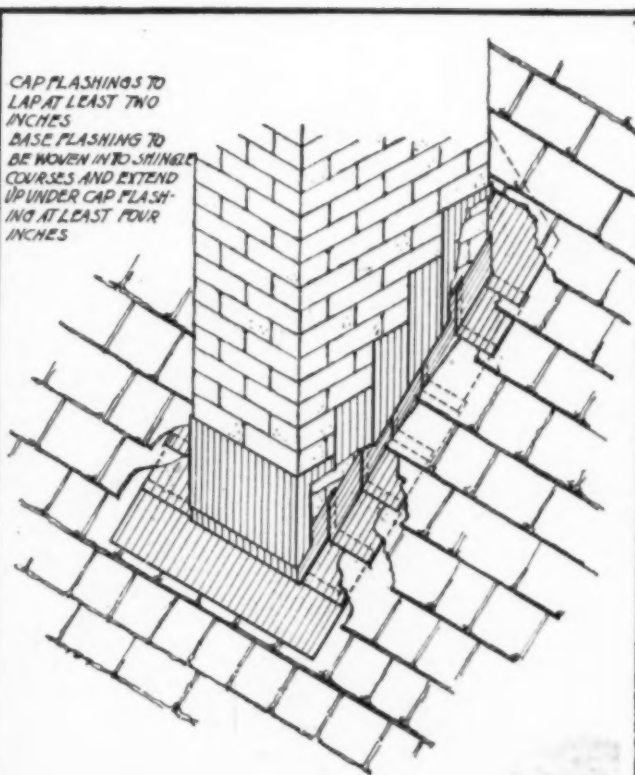
**Fig. 3. A cricket, or saddle, should be formed** back of all chimneys to throw the water to either side of the chimney as shown in Fig. 3. It is generally formed of wood, sloped enough to shed water, and covered with copper, thus forming a base flashing, which is turned up on the brick work, and cap flashed as described in Fig. 2.

**Fig. 4. The method of flashing a chimney on the** ridge of a shingle roof is shown in Fig. 4. The base flashing is here shown in one large sheet but it may be made in small sheets as described in Fig. 2. The small-piece method is recommended. The cap flashing is formed as described in Figs. 2 and 3.



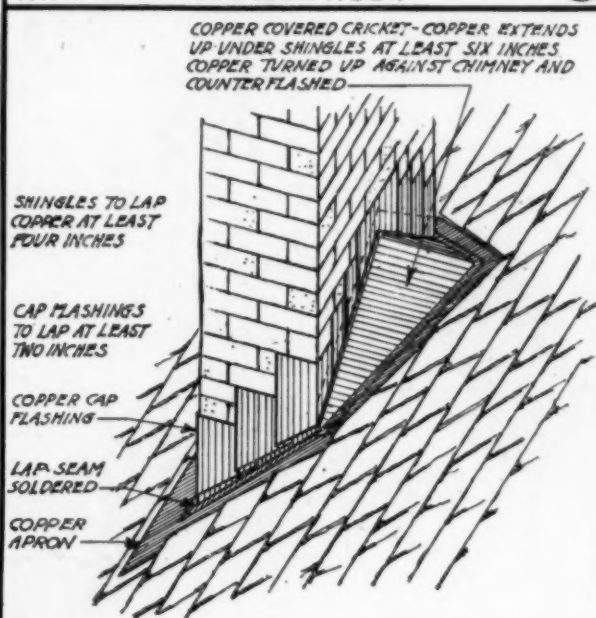
BUILT IN BASE FLASHING FOR DORMER WINDOW ON SHINGLE ROOF

①



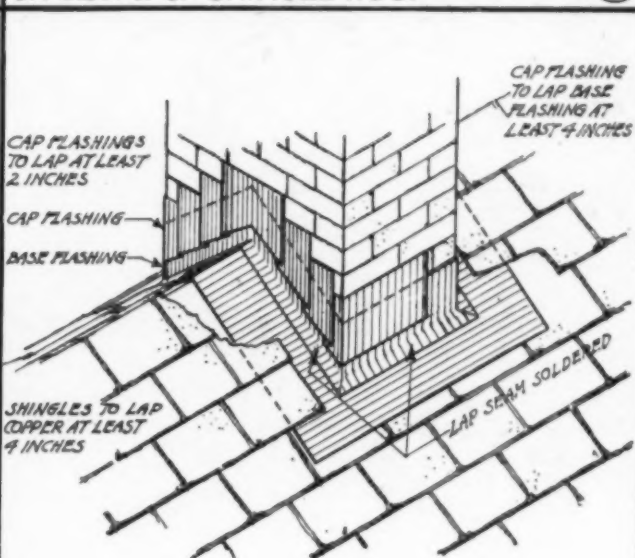
BUILT IN BASE FLASHING FOR CHIMNEY ON SLOPE OF SHINGLE ROOF

②



FLASHING FOR CHIMNEY ON SLOPE OF SHINGLE ROOF

③



FLASHING FOR CHIMNEY ON RIDGE OF SHINGLE ROOF

④

STANDARD DETAILS—COPPER AND BRASS RESEARCH ASSOCIATION



# Proof of Pudding

**T**HERE is reason why many of America's leading jobbers and dealers have standardized on Lamneck Simplified Pipe and Fittings. They have found the proof of the pudding "in the eating." They have tried all—have compared point by point—and have proved our contentions to their own satisfaction.

After all, comparison is the only basis of proof. Why not, then, accept our "proof of pudding" offer below—no cost—no obligation.

Get a right start for the new year. Buy only the best in pipe, fittings and furnace accessories in order that you, in turn, will give only the best to your customers.

## THE W. E. LAMNECK COMPANY

416-432 Dublin Avenue, Columbus, Ohio

Western Representatives: THE QUICK FURNACE & SUPPLY COMPANY, Des Moines, Iowa



### LAMNECK REMINDER LIST

Use this to check over your stock of Pipe and Fittings

W. A. Pipe  
Smoke Pipe  
Elbows  
Angles  
Pulleys  
Damper Quadrants  
Wall Stack  
Fittings  
Registers  
Wood Faces  
Cast Dampers  
Regulator Chain  
Asbestos Paper  
Aircell Paper  
Stove Pipe  
Furnace Cement  
Sheet Metal Screws  
Damper Clips  
Dry Paste  
Elbows

Have You Our Catalog?



# LAMNECK SIMPLIFIED PIPE AND FITTINGS

**FREE** We will be glad to send samples on request of our own manufactured products. Try them, compare, prove their worth to your own satisfaction. If you do not have our catalog, use the coupon.

THE W. E. LAMNECK CO., Columbus, Ohio

Gentlemen:—Kindly send your latest catalog and discount sheet.

Name \_\_\_\_\_

Address \_\_\_\_\_

Mention AMERICAN ARTISAN in your reply—Thank you!



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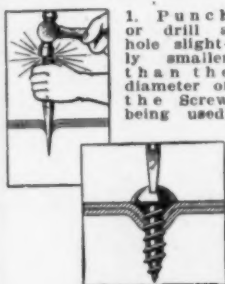
## Save Time



### PARKER-KALON HARDENED SELF-TAPPING Sheet Metal Screws

Used in place of Stove Bolts, Rivets, Etc.,  
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fastenings to sheet metal.

#### A First-Class Fastening in Two Simple Operations



2. Turn the Screw  
in with a screw  
driver, the same  
as you would a  
wood screw in  
wood.

As necessary in a sheet metal shop as sheet iron and solder. More than 35,000 sheet metal shops use them for such work as joining heating and ventilating ducts; joining sections of cornices and attaching ornaments to cornices; connecting blow pipes, erecting fans, housings, etc.; attaching metal trim to hollow metal windows and doors; putting up furnace and stove pipe, etc. Through the use of these Screws they have reduced their cost of doing this work from 50% to 75%.

Made with round heads and flat heads in the following sizes:

$\frac{3}{16}$ "	No. 6	( $\frac{3}{32}$ " x $\frac{3}{8}$ " )
$\frac{1}{4}$ "	No. 7	( $\frac{1}{8}$ " x $\frac{1}{2}$ " )
$\frac{5}{16}$ "	No. 10	( $\frac{3}{16}$ " x $\frac{3}{8}$ " )
$\frac{3}{8}$ "	No. 14	( $\frac{1}{4}$ " x $\frac{3}{8}$ " )
$1\frac{1}{4}$ "	No. 10	( $\frac{3}{16}$ " x $1\frac{1}{4}$ " )
$1\frac{1}{4}$ "	No. 14	( $\frac{1}{4}$ " x $1\frac{1}{4}$ " )

#### Plain and Stop Punches



With the Plain Punch you can punch a hole for any size Screw. The Stop Punches make the correct size hole for the size Screw you intend using.

Made in four sizes to correspond to the four diameters of Screws, No. 6, No. 7, No. 10 and No. 14.

#### PARKER-KALON "UNXLD" DAMPER QUADRANTS



Authorities on heating and ventilation concede this to be the simplest, neatest and most efficient device yet designed for regulating small and medium size dampers in hot and cold air ducts, blow pipes, etc. Its use in the largest and finest buildings throughout the country is proof of this.

It is easily and quickly bolted or riveted to either curved or flat surfaces.

The damper can be set at any angle from "full open" to "tight shut" and held in the desired position merely by tightening the wing nut. The graduated flange at the bottom of the Quadrant indicates the exact position of the damper in the duct.

Made of pressed steel for  $\frac{3}{8}$ " and  $\frac{1}{2}$ " square rod and of malleable iron for heavy dampers where  $\frac{3}{8}$ ",  $\frac{1}{4}$ " or  $\frac{7}{8}$ " square rod are needed.



### Parker-Kalon Harden Masonry Nails

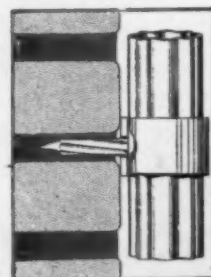
(Pat. February 14, 1924)

Make Fastenings to Brick, Mortar, Etc.,  
Easier, Quicker, Cheaper

The only Nail expressly designed for making fastenings to brick, mortar, concrete, etc. Sheet metal workers everywhere are using them for fastening gutter and leader pipe to brick walls; attaching cornices, flashings, etc., to brick walls and roofs; hanging ventilation ducts to concrete ceilings and for many other purposes. They are driven into masonry the same as ordinary nails are driven into wood.

Made in three sizes:

$\frac{3}{16}$ "	x 1"
$\frac{1}{4}$ "	x $1\frac{1}{2}$ "
$\frac{1}{4}$ "	x 2"



Showing a leader pipe  
fastened to a brick wall with  
PARKER-KALON Hard-  
ened MASONRY NAILS.  
Note how the Nail becomes  
embedded in the mortar.

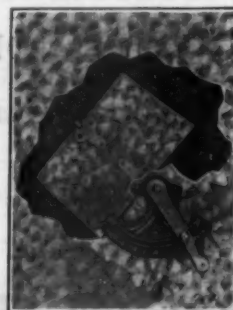
#### Masonry Drill Punches



A quick-cutting drill especially designed for making holes for the Hardened Masonry Nails in such cases as it may be necessary to make holes for them.

Made in two sizes:

$\frac{3}{16}$ "	for use with the $\frac{3}{16}$ " x 1" Masonry Nails.
$\frac{1}{4}$ "	for use with $\frac{1}{4}$ " x $1\frac{1}{2}$ " and $\frac{1}{4}$ " x 2" Masonry Nails.



View of a Quadrant installa-  
tion with part of the duct cut  
away to show the damper.

If you are not familiar with the time-and-labor-saving advantages of the PARKER-KALON PRODUCTS illustrated and described above, by all means ask your jobber's salesman about them the next time he comes around. Nearly all jobbers of tinner's supplies and furnace fittings handle PARKER-KALON PRODUCTS.

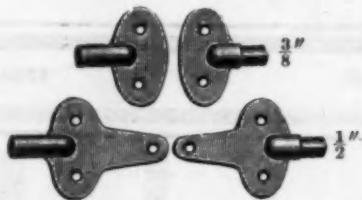
# In More Than Sheet Metal

# N PRODUCTS & Labor

## PARKER-KALON DAMPER ACCESSORIES

*for Sheet Metal Shops That Install Heating and Ventilating Systems*

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They are used instead of rods on small and medium size dampers. Quicker to attach than a rod and they cost less.

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$\frac{3}{8}$ " to fit the  $\frac{3}{8}$ " "Unxld" Quadrants  
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### DAMPER and DEFLECTOR CASTINGS



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Deflector

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### DOOR HANDLES and DOOR BUCKLES WITH TONGUES



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Easy, because the rod is fastened firmly to the damper without drilling and consequent weakening of the rod; and quick, because the drilling operation is eliminated.

Made for  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ " and  $\frac{7}{8}$ " square rod.



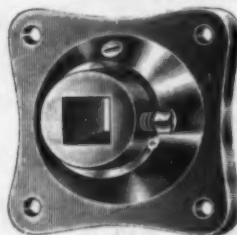
(Patented)

### DAMPER PLATES



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### DAMPER BALL BEARING BUSHINGS



Used to assure the easy operation of heavy dampers in smoke breechings and ventilation ducts. Prevents dampers from "binding" because it keeps them in the center of the pipe or duct.

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### DAMPER LEVERS



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Double

Both the single and double Levers are made to fit  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ " and  $\frac{7}{8}$ " square rod.

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*Manufacturers*

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Sheet Metal, Roofing  
Stove and Hardware  
Industries

Founded 1886

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### AN ACHIEVEMENT

An explanatory note regarding service to readers of AMERICAN ARTISAN. This paper is now nearing the completion of a half century of service. For almost fifty years it has catered to the needs of the men in the industries which it represents. At no time during its long and successful career has AMERICAN ARTISAN been in a better position to render complete, adequate service to its readers than it is today. In addition to the matter contained in our regular weekly publication, we maintain Service Departments for the use of our readers. If you have a problem to solve, we courteously invite you to submit it to us for solution. In what better way can we learn of your problems than from you direct?

A

The  
Heaviest  
Steel  
Furnace  
Made

A

K

The Only  
Furnace  
Without Any  
Cast Iron  
Joints

K

Q

More  
Moisture  
Than Any  
Other  
Furnace

Q

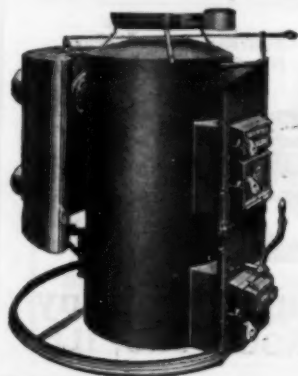
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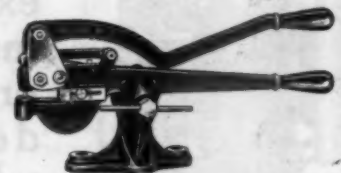
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Efficient, durable and economical to operate.



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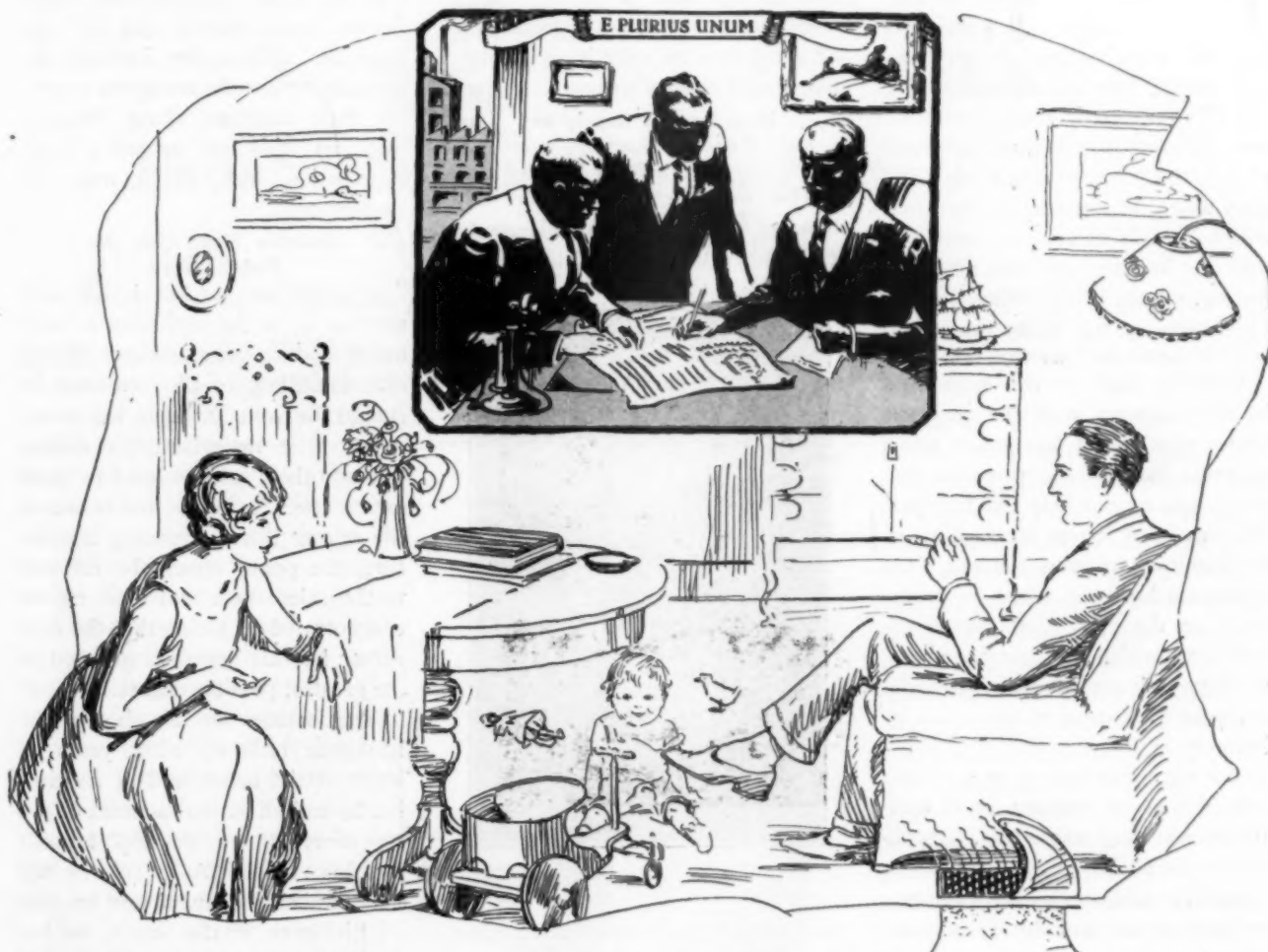
# American Artisan and Hardware Record



Vol. 92.

CHICAGO, DECEMBER 25, 1926.

No. 26.



The April Meeting of the National Warm Air Heating and Ventilating Association Will Do Much Toward Bringing About the Objective Pictured Herewith

## Uniting Forces For Better Service

By GEORGE J. DUERR

THE thought uppermost in the mind of each warm air furnace installer, manufacturer and salesman, as he turns with renewed vigor from the joys of the Xmas holidays to the game of business, is, what does the new year hold for me? Will I find greater business prospects awaiting me on the other side as I draw aside the 1927 portals?

The three men pictured in bold relief above—the furnace manufacturer, installer and salesman—are intent upon finding ways and means of making warm air heating industry pay them bigger dividends. More money than they got last year is their chief interest. Their

entire effort throughout the coming year will be directed toward squeezing the goose that lays the golden eggs, only they want the golden eggs to be bigger and yellower than ever.

How are they going to accomplish their object? How are they going to make the man in the easy chair "come across" with a larger monetary tribute to the warm air heating industry in 1927 than he did in 1926?

The answer is simple. By making the man in the easy chair and his family smile in the enjoyment of the health and comfort made possible to him through the

(Please Turn to Page 235)



# General Survey and Outlook of Warm Air Heating Industry

By E. B. LANGENBERG, President, National Warm Air Heating & Ventilating Association

**T**O predict is one thing, to fulfill is another. A prediction may be based on past experience, and taking into consideration the law of averages, it might work out very satisfactorily in the fulfillment of it, but so many predictions have been based on guesses, wherein one man's guess is as good as another's, that one hesitates to make any prediction, except in an abstract way.

## Industry Has Made Most Progress In Last 10 Years

Looking back at the warm air heating industry over the past ten years in which it has made more progress than in the previous 100 years, one cannot help but feel that the future of warm air heating in the home is positively assured. This assurance however, must be predicated on the growth of correct installation, which has been the greatest drawback and the most generally accepted handicap ever placed on an industry.

We all know that there are difficulties in every business which have to be met and overcome and the sooner we all recognize some of our hereditary weaknesses in this industry, the sooner will we try to overcome them and progress in the right direction. It is useless to blame the troubles all on the manufacturer, and the same can be said about blaming them all on the installer.

As a corrective for a situation which we all consider unsatisfactory, why not take the strong points on each side of the argument and combine them into one plan which will eliminate the weaknesses of our present distribution plan and concentrate on the major things that will make for progress and more rapid growth in the business. To do this in a constructive way, it is necessary that we have a plan to work on, and to that end the following outline will at least call attention to some things that might be done, and if only a few men will

follow the idea through, others might possibly see advantages in it or improvements over it or the motive would at least prevail.

## How Law of Supply and Demand Functions a New Way

The manufacturer is naturally looking for an outlet for his goods. He studies his markets, he studies

ers, but in the rush of events many dealers were created and did not have the ability, the financial responsibility nor the energy to organize their business along business lines, and this has created a weak distribution link which must be strengthened.

## Installer Must Quit the Bench Work

A warm air furnace is not sold until it is in the consumer's basement, and it goes without saying that in selling to the consumer it should be sold through his viewpoint. The manufacturers realize this and their sales policies to some extent cover it, but as this is one of the strong links governing the future, the policy should be restated to the sales force and their efforts concentrated on seeing that the consumer has his demands satisfied to the greatest possible degree.

The installer has his shop which has been built up after years of work at the bench and at no time has he had all of the facilities of the manufacturer to develop himself and his market. As a rule he has been limited in capital and because of his work at the bench, he has been limited in time. Time that should have been used to better advantage in direct selling and the making of proper collections.

He has not realized the value of organization in his own business and has been content for the most part, in securing a daily wage, which in many cases is less than the mechanics who work for him. Facing these facts which greet him every morning as he goes to work and wondering which way to turn to increase his earning capacity, it is surprising that more dealers have not made use of the trained salesman who call on them from day to day. Salesmen that know their business (of course some don't) but those that do, are full of ideas that can be cashed in by the dealer. Instead of dreading



E. B. Langenberg

his product, understands finance and he organizes a personnel to carry out his ideas. For years salesmen have been endeavoring to dispose of these goods to dealers who in turn are supposed to place them in the hands of the consumer. Where the dealer had an organized business, employed salesmen and really *managed* his business, the plan seemed to work out nicely. Sales increased and the consumer was apparently satisfied.

It so happens, however, that the public's ideas changed and as more information is disseminated on a subject, curiosity is created. "I hope it works," becomes, "It must work," and the law of supply and demand starts to function in a new way. As production increased, it was necessary to develop new deal-

to meet the various salesmen that enter his shop, how much better it would work if he met them at the train with a greeting something like this: "Hello, Jim, I'm sure glad to see you. I'm so busy that I haven't had a chance to go out and do anything on your goods since your last trip. If you will stay over for about two days, I will make sure that you

can help me to make some money and make some for your firm."

At the annual meeting of the National Warm Air Heating and Ventilating Association in April, it is planned to conduct a big sales conference, and while the association has accomplished considerable, the coming conference will undoubtedly prove one of the greatest meetings

of this kind ever held by an industry that is constantly alert

The fulfillment of our desires is in the working out of the problems that confront us as manufacturers and dealers and just a fraction more of that good will so essential to a successful business will make this industry of more value to the public and to progress in 1927.

## Prospects Good for a Busy 1927 in Warm Air Heating

By ALLEN W. WILLIAM, Secretary, National Warm Air Heating and Ventilating Association

THE publication of the AMERICAN ARTISAN's 33rd Warm Air Furnace Annual affords me a good opportunity to present a short review of the developments of the past twelve months in the warm air furnace industry and perhaps to surmise a little as to the future. A review of this kind by those having the best interests of warm air heating at heart brings to mind much that is encouraging.

Some fifteen years ago a leading manufacturer of warm air furnaces said: "Our industry is being betrayed in the house of its friends." His statement was accepted at the time as correctly reflecting the serious indifference to the possibilities of the future of the business by both manufacturer and installer.

The change from this attitude has been entirely too slow, but 1926 undoubtedly surpasses any previous year in the improvement made in this very necessary and desirable direction, and is the first year in which there has been any substantial justification for a feeling that warm air heating is coming into its own. However, a continued effort will be necessary to retain the prestige now being secured. The responsibility for such effort rests upon every one in the business.

Any change for the better has come through co-operation, and the National Warm Air Heating & Ventilating Association has been one means to that end. However, the real credit is due to the loyal

and generous support of the individual members, the co-operation of kindred organizations, the help of the trade press and that of the University of Illinois.

Any one can see now that it was good business to inaugurate and finance the research work in co-

operation. The problem is to make them want it.

During 1926 wide awake installers have seemed to display a higher appreciation of the work that is being done to promote popularity of warm air heating, and salesmen have apparently changed their attitude of indifference, if not actual prejudice, to one of enthusiasm and support of the research work, the Standard Code and the publicity efforts of the National Association. Surely this is encouraging.

### Distribution Methods Improved

Nineteen hundred and twenty-six has also seen an improvement in the methods of merchandising warm air furnaces and their accessories and each coming year will require still better methods to insure success. More and more attractive salesrooms, real salesmanship and a fuller knowledge of the engineering problems of the business will be necessary until finally all manufacturers and installers must be in line with the progressive spirit of the times or seek some other field of business endeavor.

Apparently there is no reason why 1927 should not show an increase in the number of units sold and bring with it more chance to sell real warm air heating plants.

The National Warm Air Heating & Ventilating Association is grateful to its many friends and supporters for a successful year during 1926.



Allen W. Williams

operation with the University of Illinois some years ago; then a little later to assist in formulating and publishing the Standard Code, and two years back to commence a real publicity activity, but it required faith, foresight and a broad-minded spirit to support these things in the start. These activities have created a real interest in warm air heating and a real desire for better heating equipment on the part of the consumer. When the public wants a thing badly enough they always get

# A Furnace Salesman Sobs

By BILL

"**S**AY, Bill, us superheterodine salesmen have got to put in a few more tubes, eliminate static, get greater selectivity and run on our own power! Good grief! Not only that—but we gotta improve our broadcasting and get more high-brow programs! Yes sir an' yes ma'am. If we want to hold onto the little old job, we gotta get higher learnin', according to what Lyman said at the Urbana convention this month. Sufferin' sunfish, what an order!" ejaculated Sam, eyeing his pal, Bill, the sales marvel.

"What's bitin' him, Sam? He's got a high-tuned outfit. His sales battery looks to me as if it was chargin' full tilt! Isn't he listenin' in right, or won't he adjust the dial?"

"He's not kickin', Bill, he says he's statin' a hot bunch of facts! At that little Urbana affray where the manufacturers fired on the deal-

blame for everything wrong from 'pepless' publicity to back-firing ducts!"

"Sure, as if it wasn't enough for a fellow to compete with the 'True Story' and detective story magazines for an interesting line, get a hide as tough as an alligator's and cultivate the persistence of a hungry mosquito!"

"Yeah, 'at's it, big boy! And when some cold-blooded bozo throws a tub of icewater on you after your best sales talk, you gotta come up smiling—with a water lily in your hand! Affable, that's us! Genial as the very deuce!"

"And besides bein' a male Pollyanna, you gotta know the address of the nearest purveyor of pre-war stuff and all the flaming youth jokes, and then Bill, they're not satisfied! They're askin' for more!"

"What's eatin' 'em now, Sam? Don't we turn in cute enough contracts, or did we omit selling somebody?"

"Why, Bill, we're to blame for every 'rotten' furnace installation in the country! We don't know enough to tell the dealer how to do his job! and see that he does it!"

"When I Get This Info Under My Stacomb, I'm Gonna Let Some Other Guy Do the Peddlin'"

"They want us to be a bunch of district superintendents dealing in sweetness and light? What's wrong with the dealer playing his own little game?"

"Well, Bill, he don't always know enough to! Some smart guy's gotta show him how. That's us, isn't it? But how ya gonna—that's what Buck Taylor wanted to know."



ers and the dealers gassed the manufacturers till it looked like a Balkan war, us salesmen were finally dragged in for a few of the stray shots, and when they all saw what a handsome target we made, they dropped most of the verbal air bombs on us!"

"Yeah! And how! Willie, the poor woiking boy salesman, is to



"When Some Coldblooded Bozo Throws Iewater on Your Best Sales Talk You Gotta Keep Smiling"

"Yeah, Buck mouthed a carload that time! Isn't it plenty we're doing when we go out and sell a young hopeful installer a bunch of nifty furnaces?"

"They're even holding that against us, Bill. One bright boy sold a flock of furnaces to a dealer who couldn't even figure the heating surface on a toaster. And he's kickin' cause the salesman didn't stick around an' put in all his jobs for him according to the Standard Code—for the price of his sales commission. That's another thing the dealers are kickin' about—we arn't code experts!"

"Code experts! We gotta be a lot of missionaries peddling selling talk an' statistics an' mathematics and technicalities!"

"Yeah, an' we gotta have a college education! Lyman says it's the only solution to the 'dumb dealer' problem. He's got a gang of higher learnin' pedigrees working for him an' he says they're good! They can tell a guy offhand the ratio of his heating area to the temperature without a thermometer."

"It's getting so you gotta have a college education to sell ribbons by the yard! There must be a big shortage of brains if the salesmen gotta do all the knowin'. Maybe we'd better recommend a few advanced courses for the manufacturers and dealers!"



"No kiddin', Bill, we've gotta get wised up to maintain our superman poise. There's nothin' like bein' in the know!"

"Well, I'm married an' I gotta keep the home fires burning, so it'll have to be a Sears Roebuck College for me—educated by mail! But I'm telling you that when I get all this

'info' under my Stacomb, I'm gonna sit in my big office and tell some other guy how to do the peddlin'. It won't be me that'll go out and crash the world and his grouch with a sauve line!! I'll hire some intellectually unsophisticated bozo to swing the sales to these warm air furnace installers."

## Uniting Forces For Better Service

(Concluded from page 231)

use of a warm air heating system properly installed. That and that only is the way the industry's service can be extended.

Wonderful opportunities are opening in the warm air heating industry, but before these can be developed to their fullest extent, a better understanding must be created between the furnace dealer on the one hand and the manufacturer on the other, with the salesman co-operating with both, in order that all three can attain the main objective, that of serving the public.

The furnace manufacturer must win the confidence of his dealers by proving to them by his acts, not words, that he is not primarily interested in selling furnaces as such, but that he is interested in seeing to it that the public gets an equivalent in service and satisfaction for the money it is invited to spend in the warm air heating industry.

There are furnace manufacturers in the industry today who are working on that principle. They have so conducted their affairs with their dealers that the latter actually consider it a privilege to do business with them.

These firms have, by fair dealing and dignified selling, actually built up a corps of furnace installers who are real business men, honored and respected in their several communities for their knowledge and high ideals. Other furnace manufacturers who, unfortunately for themselves, are not imbued with the same high ideals, have attempted time and again to take these dealers away from the fold, but they have not

succeeded, regardless of the attractiveness of the bait.

There is in the world of business what might well be termed the parasite, the type of business man and salesman who is constantly circulating about expending enormous efforts in attempts to horn in on the green pastures of the idealist manufacturer, who through the proper use of sympathetic methods of cultivation have made themselves "solid" with their dealers. These parasites are weeds in the garden of business. They spring up between the rows of plants, attach themselves to the plant roots and drain away the life-giving nourishment of the plant, entirely without thought or care of the harm they are doing to the industry.

Warning signs must be posted by manufacturers so as to help the dealer to protect himself against the leech. The manufacturer must take his dealers and salesmen into his confidence and point out to them that winning and keeping the good will of the public is the most important job at the present time. They must show the dealers that they are willing to forego practices of the past which are detrimental to the industry. More care should be exercised by the manufacturer in selecting the men whom he wishes to represent him. These men are to carry his product and his industry to the public. Therefore, steps should be taken to prevent the industry from being misrepresented. The proposed conference of dealers and salesmen to be held in conjunction with the April meeting of the

National Warm Air Heating and Ventilating Association will go a long way toward accomplishing this object.

The consumer is the one whom the industry must serve and satisfy. That should be the industry's main object. After all the consumer pays the bills and thereby furnishes the capital with which the wheels of the industry are kept in motion; therefore, his wishes must be consulted.

If the wishes of the consumer are determined and catered to, the prospects for greater business in 1927 are very good indeed.

### Majority of Furnace Installers Not Associate Members of National

The majority of warm air furnace installers of the United States today are not associate members of the National Warm Air Heating and Ventilating Association. This fact was revealed by the AMERICAN ARTISAN questionnaire which asked the following three questions on the subject: "Are you an associate member of the National Warm Air Heating and Ventilating Association? Is your membership helping you? Have you signed the code pledge card?"

To the membership question 41.6 per cent answered in the affirmative, while 58.3 per cent said that they had not taken out associate memberships in the organization.

To the third question the answers were equally divided, 50 per cent saying they had signed the Standard Furnace Code Pledge Card and 50 per cent said that they have not signed.

### Distributors and Salesmen's Auxiliary Will Meet in Philadelphia

A special meeting of the Distributors and Salesmen's Auxiliary and luncheon will be held on Wednesday, December 29, 1926, at 1 o'clock p. m., at the Hotel Aldine, 19th and Chestnut Streets, Philadelphia, according to O. C. Brooks, secretary, 638 Turner Avenue, Drexel Hill, Pennsylvania.



North Woods Lodge of Mr Louis Kuehn, Located on Duck Lake, Gogebic County, Michigan, Heated with Warm Air by a Wood-Burning Furnace

## Hunting Lodge Warm Air Heated

**T**HE development of greater sales in quality warm air furnace installations and quality sheet metal products is the primary object of every real warm air furnace installer and sheet metal contractor. Unfortunately many of the men in these industries do not have high enough ideals about their industry and work. They fear to tackle the really big jobs.

In fact, there are numerous warm air furnace installers and sheet

metal contractors who doubt the feasibility of operating a combination warm air furnace and sheet metal shop, and yet the work which they do is so closely related.

In new construction work especially it would seem that the same contractor who puts in the warm air heating system would be the logical person to do all of the sheet metal work on the building as well; namely, the installation of gutters, downspouts, metal weather stripping

and the sheet metal roofing work.

As an illustration of the possibilities in creating sales for large quantities of sheet metal products and quality workmanship simultaneously with that of installing a warm air furnace, there is illustrated herewith the 18-room, 3-story North Woods Lodge of Mr. Louis Kuehn, President of the Milwaukee Corrugating Company, located on Duck Lake on the northern peninsula of Gogebic County, Michigan.

The architects who designed the lodge, Robert Messmer & Brother, Milwaukee, specified warm air heat, the contractors who did the work being Walter Oefflein, Inc., Milwaukee.

The building was roofed with Milcor Spanish metal tile, painted in natural clay colors: burnt red, browns, yellows, blues, etc. This is the first actual reproduction of clay colors ever attempted on a metal roof.

The warm air furnace installed, as shown in the illustration is a No. 16 Perfect wood-burning type, including casing cap, casing collar,



Garage of Louis Kuehn's North Woods Lodge. This building is roofed with Sheet Metal Tile Spanish Style



**Living Room and Front Exterior View of Mr. Kuehn's North Woods Lodge. See Article for Total Amount of Sheet Metal Used in the Construction of this Summer Home**

propeller fan and regulator, adjusted to handle 1,200 to 1,400 square inches of cross-section pipe area. The furnace pipe and fittings, registers, stove pipe and elbows were all Milcor products.

Upon the completion of the heating system installation, the builders carried their work to the installation of sheet metal products, including a Spanish sheet metal tile roof for both the lodge and the garage near the house.

Some definite idea of the extent to which sheet metal products were used in connection with this very attractive lodge can be had from the vast possibilities for the sale of such products:

#### **In Connection With the Furnace Installation**

Three hundred and thirty feet round furnace pipe, ranging from 6 to 24" No. 24 gage galvanized; 58 adjustable furnace pipe elbows, ranging from 6 to 24" No. 24 gage and No. 26 gage, galvanized; 9 furnace pipe adjustable angles, No. 26 gage, galvanized, ranging from 12 to 18"; 11 style "B" collars, from 9 to 18"; 4 plan pans, galvanized, 12 and 16" collars; one 12" and two 9"

galvanized y's; 2 tees; 2 No. 201 universal boots; 1 205 center boot.

In addition to these there were used, 97 length double wall pipe, ranging from 2 to 24"; 22 angles for double wall stacks; 5 angles for baseboard registers; 14 double stackheads; 2 double tees; 1 double boot; 7 double collar boots; 11 warm air dampers; 1 clean out collar and cap; 18 registers; 4 wood cold air faces; 28' rectangular duct, No. 26 gage, galvanized, 30x8"; 1

cold air box, 48x30x8"; 1 cold air head; 1 cold air boot, 59x40x20".

There were also such accessories as asbestos paper, paste, sheet metal screws, galvanized wire, etc.; 50 joints 6" stove pipe; 18 corrugated stove pipe elbows; 6 adjustable stove pipe elbows; 1 tee; 3 dampers.

#### **The Metal Roofing Employed**

On the roof of the house and garage there were used 76½ square Milcor Spanish metal tile; 134 val-



**Basement of Mr. Kuehn's North Woods Lodge, Showing Location of Warm Air Furnace and Cold and Warm Air Ducts**



ley tile (Spanish); 192½' ridging (Spanish); 23' ridge caps (Spanish); 25' hips; (Spanish); 139' end wall flashing; 76' valley; 328' gable ends; 7 ridge roll ends; 1 hip starter; 2 finials, all Spanish; 200 5x10 flat shingles; 20 lbs. roofing

cement; 3 kegs roofing nails; 4 Milcor spark catchers for chimneys.

There were 800 feet of Armco Ingot iron gutter used, and 210 feet of interlocking square Armco conductor pipe, also elbows, shoes, in addition to quantities of incidental

materials, all of which the contractor uses.

There were used 1770 square yards stay-rib metal lath; 48' cold rolled channels; 204' No. 1 expansion corner bead; 624' metal picture molding; 1 keg metal lath nails.

## Furnace Dealers Must Clean Up Their Shops and Windows

*Before They Can Hope to Put Dignity Into the Warm Air Heating Industry*

By ROY C. WALKER, The Meyer Furnace Company

**W**ARM air furnace dealers will have to change their attitude towards their business before they can reasonably expect to do any business. How can Mr. and Mrs. Warm Air Heating system prospect be convinced of the merits of that system by a dealer who is poorly informed about his subject, whose personal appearance and habits are unclean, whose store resembles a junk shop? What benefit would a local advertising campaign be to this representative of our industry?

In my opinion a local advertisement telling of the newly arranged scientific methods of warm air heating in this man's local paper would do more harm than good, and if in 1927 the warm air furnace industry is to take another stride towards its ultimate dignified position among business and professional men like physicians and architects, more attention must be given to advertising and selling by warm air furnace dealers.

### Dealer's Shop Can Be His Best Advertisement

Advertising, in one sense, means creating a public opinion by the unspoken word. Salesmanship is creating an individual desire by the spoken word.

Retail advertising starts with the personality of the dealer—personal habits, personal appearance, his interest in his family, church and civic affairs.

Next the store or shop. Why

spend money to advertise the superiority of one's merchandise or mechanical and engineering ability and skill when his shop resembles a junk shop?

Many a man's shop can be his best advertisement. It is better to clean up the shop, discard junk, efficiently arrange stock and tools, clean and dress the windows, keep the personal appearance and habits above criticism before asking the public to believe that he ever so much as heard of some scientific warm air furnace installation method.

Any man anticipating success in business should certainly prepare himself with a thorough knowledge of the furnace he is selling. Of course without such knowledge failure to convince others of its worth is certain.

The manufacturer hires and trains representatives to impart this knowledge to dealers. Therefore, keeping posted on the product consists of simply listening attentively and frequently to what this representative has to say; also reading catalogues and descriptive matter thoroughly from time to time.

If a dealer can not thoroughly and enthusiastically explain every detail of his product and the latest scientific Standard Code installation method, he had better quit. He is going to have a hard time in the warm air furnace business from now on—that is certain.

When all of these things are

done, and not until they are done, is any dealer ready to do local advertising. Then his ads should be as carefully worded as a verbal explanation to a friend—dignified in nature, persistent, forceful and above all, absolutely truthful.

### When Is a Dealer Ready to Advertise?

The local advertisement never gets the order, as some are led to believe. Its principal duty is that of inspiring the possible buyer with a desire to know more about the product and methods of the advertiser. This encouragement now and then prompts him to inquire further, which gives the dealer an opportunity to show the customer his personal appearance and his shop appearance, to demonstrate personally his faith in his goods.

If the dealer's personal appearance, shop and methods appeal to this prospect, the sale is half made. If the furnace is thoroughly explained, the sale is generally made.

The loss of an order is seldom caused by a low price made by a competitor. It is lost because of a lack of ability to impress a prospect with the worth of better goods. The low price competitor lacks the ability entirely and knows it. Therefore it is necessary for him to make his merchandise and methods attractive by means of a low-price tag and a low price tag is not putting the warm air furnace business into the dignified position it has the right to enjoy.

# Standard Code Aids Three Installers to Sell Warm Air Service

## Difficult Replacement Jobs Made to Function Properly by Using Standard Code

By JAMES CHARLES ALLEN, Warm Air Heating Engineer

**I**N THIS day of so many triangles, as noted in the court's records, how is the heating engineer and salesman to keep away from these same courts in a triangle like this? He generally goes them one better by getting into a quartette such as the following and thereby renders a service:

First, Walter Earle Bort is the architect, office Tucker Building, Clinton, Iowa. Mr. Bort was a student in the offices of Smith Henchman and Grills, Detroit, Mich., and had been schooled to do big things and do them well.

Secondly, there are the owners, Potters Brothers, W. S., A. M. and

M. B., Morrisson, Illinois, who were born and reared with the lumber business as a background. This business was established by M. H. Potter in 1879. Mr. Potter, Sr.'s motto was, "Give every customer a dollar's worth of merchandise for the dollar he spends with you."

Thirdly comes the furnace dealer,

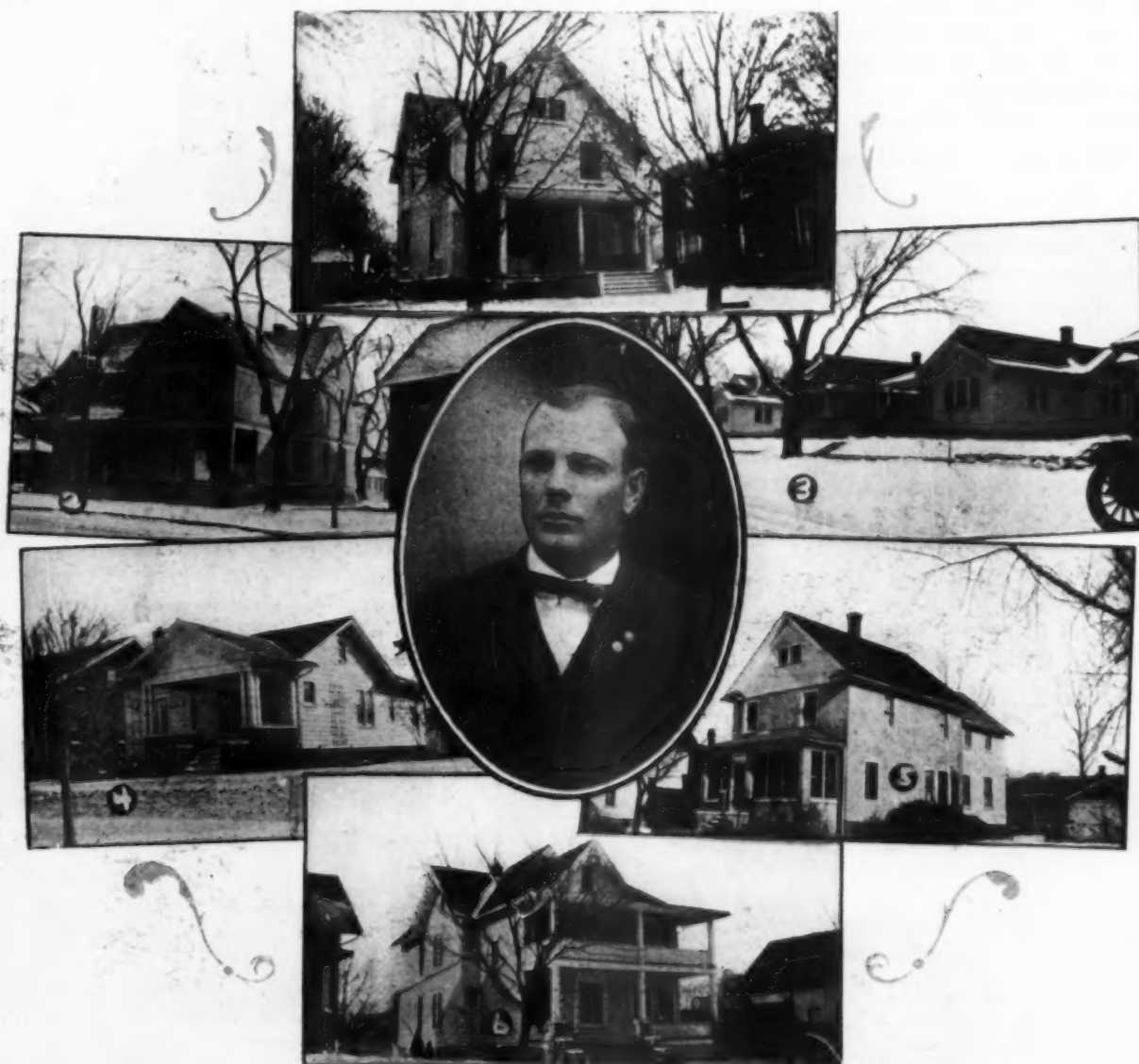


Figure 1, Residence of Howard Knodle, 1434 Blaisdell Street, Rockford, Illinois. 2—Double House, 509 North Horseman Street, Rockford. 3—Houses on 6th Avenue Between 12th and 13th Streets, Rockford. 4—Residence of F. G. McAlpine, 1411 Post Avenue, Rockford. 5—W. D. Covey Residence, 519 Tower Avenue, Rockford. 6—Karlzun Flats, 616 Prospect Street, Rockford. Insert, E. J. Johnston, 417 Horsman Street, Rockford, Furnace Installer who put in all of these warm air furnace installations

who in this case is F. S. Owells, a man 72 years old, but as spry and active as any men at 50, whose word is as good as his bond. He is a mechanic from the ground up, and a business man.

Fourthly, last but not least, the manufacturer who in this case was the International Heater Company, Utica, New York.

#### A System That Caused Better Circulation

In the case of the quadrangle referred to, it began like this. I looked over the building plans of the Potters Brothers emporium, found everything complete, except the warm air heating, which was left to the contractor to lay out. The only specification was that he had to guarantee to heat the offices and all of the building, except warehouse, to

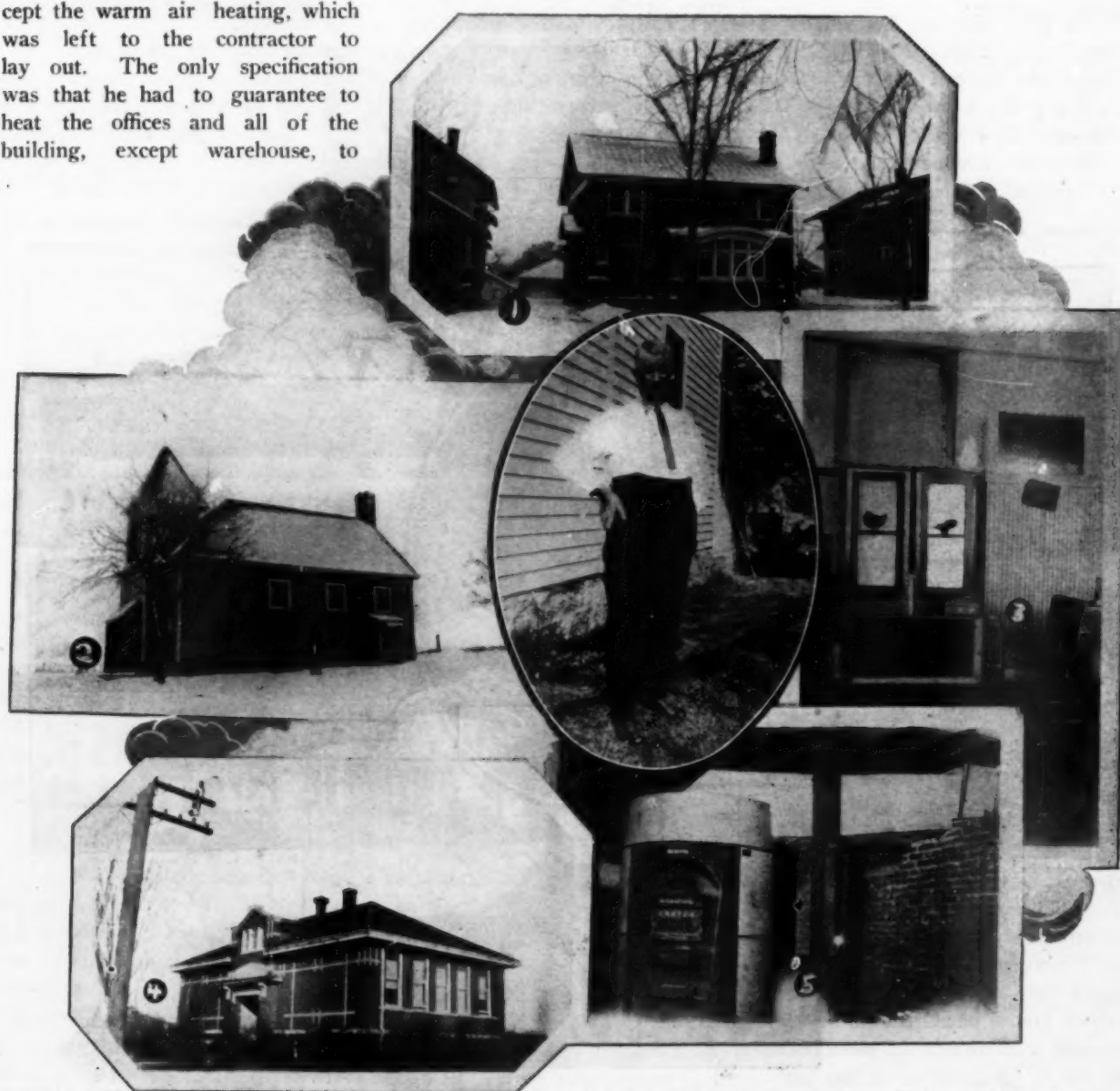
70° F. in coldest winter weather. Mr. Owells came to me and said: "Allen, I have a hard one, a brick and tile building, with tile floors, large windows, metal sash, corner exposure—north and east—one story high, 12' 10" in clear, and warehouse 12' 10" in clear."

How to heat this building rather took my breath away at first. After figuring it up, however, using the Standard Code, I felt at ease, and as the Messrs. Potters say that every run throws on equal and adequate amount of heat, without

overtaxing the furnace, everything is jake.

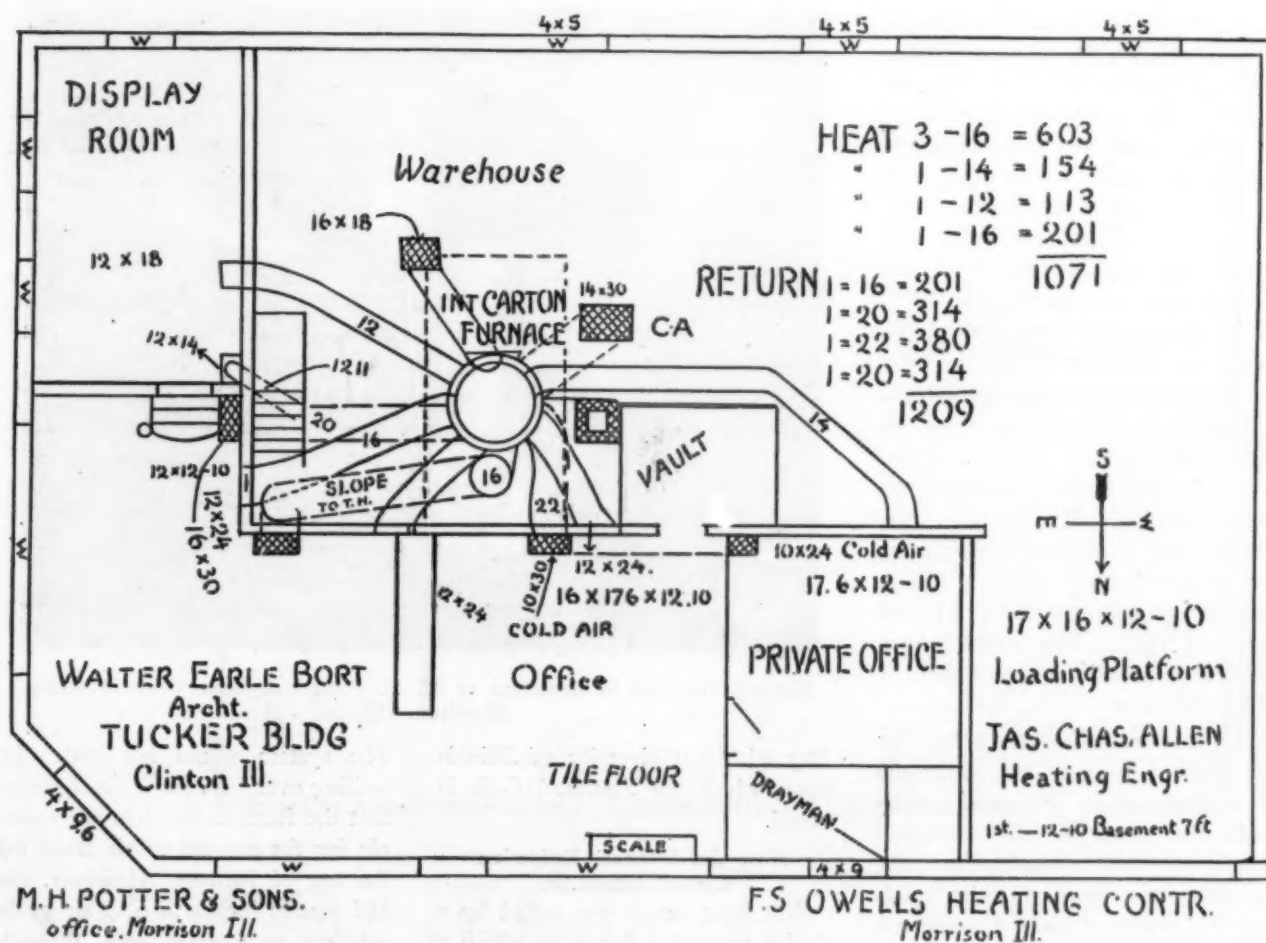
You will notice on the plan that the warm air area totals 1,071 square inches. The return air area equals 1,209 square inches, or approximately 14% more than the warm air area.

It is the extra return air, locating the warm air openings and returns as close to the furnace as possible, that makes this job deliver a uniform heat to all the rooms. The heat runs are all side wall faces, except the display and warehouses. All returns are floor spaces and



Insert, R. J. Moscrop, 414 Elm Street, Rockford, Illinois, Warm Air Furnace Installer. 1—Residence of Ray Johnson, 412 London Avenue, Rockford. 2—West District No. 95 School, Rockford. 3—Interior of West District No. 95 School, Rockford. 4—Grand View School on Route 2, Rockford. 5—Showing Basement of West District No. 95 School, Rockford. These installations were made by Mr. Moscrop





dropped directly to the furnaces. I never place my returns on the outside walls if I can get them on an inside wall and close to the furnace. The temperatures maintained throughout the offices and display rooms are equal.

## How Far Wrong One Company Had Gone

I might add that one furnace company figured to run a 12" to the private office, a 12" to the office, a 14" to the public space and a 14"

two 12", each 113 square inches = 226 square inches, two 14", each 154 square inches = 308 square inches, or a total of 534 square inches.

The Code called for two 12" and to the display room. This equals



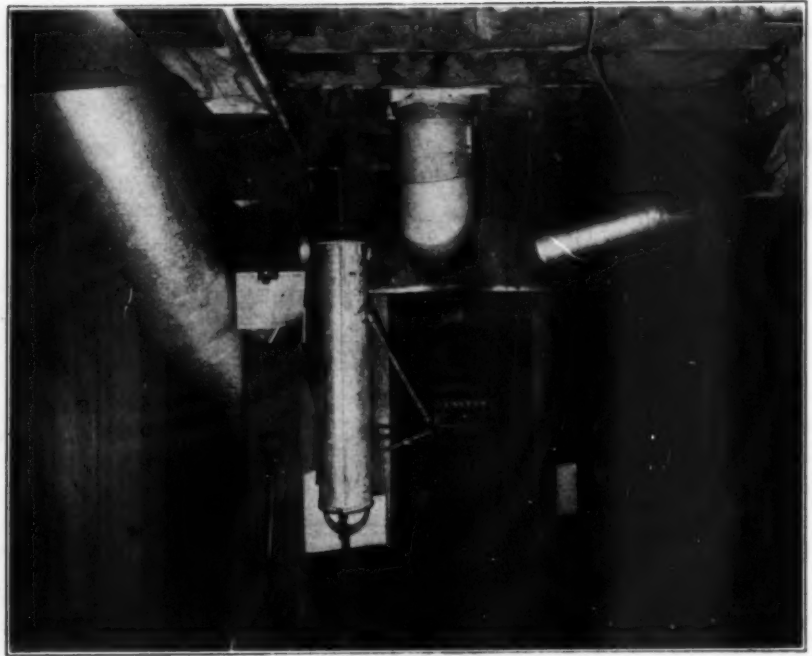
Exterior View of M. H. Potters & Sons Office, Morrison, Illinois. Insert, F. S. Owells, Warm Air Heating System Installer, Morrison, Illinois

three 16" to heat the same area, or 870 square inches of warm air—63% more than the 534 that the other furnace company figured.

What would be the result if the 534 square inches of air were used if the standard is based on a delivery of 175° F. at the register, if you added 63% to the 175° you would have a temperature of 285° F. at the register to equal the 175°, using the Standard Code.

Fellow furnace men, what does this mean? It is simply this: an overheated furnace that would not last. Furthermore, overheated air to breathe and to dry out your furniture and a drafty condition of circulation in the place, a difference of return air at 65° and intake 175° or 110°. You would have a return of 65 and intake of 285, or 220° difference.

I am frank to say that after over 31 years of using a Code, as the one I worked out in 1895 was practically the same as the Standard Code, only not arrived at in quite so exhaustive research as in building the Standard Code, I would not consider for one minute the use of any other method than that laid down as the result of research work of Professors Willard, Kratz and



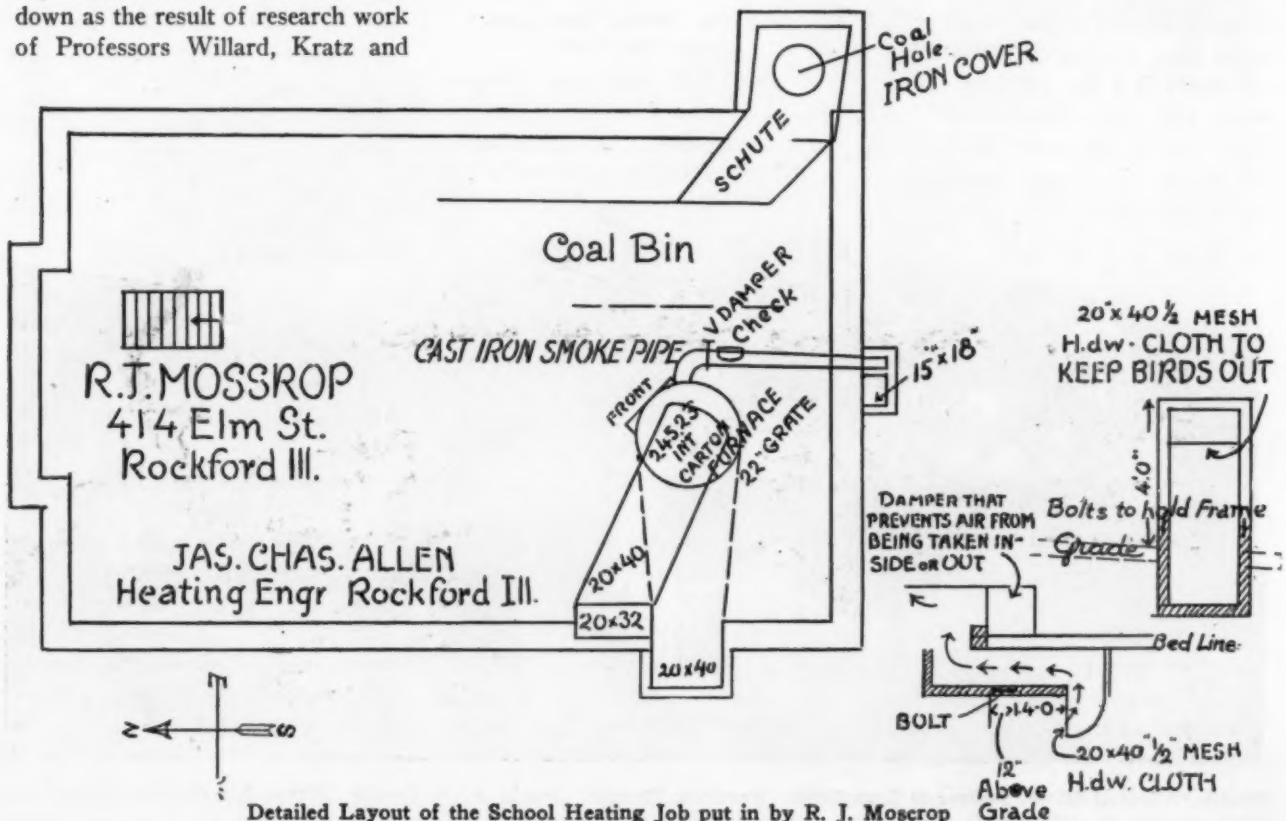
Furnace Installed in Basement of M. H. Potters & Sons Office Building, Morrison, Illinois

Day of the University of Illinois upon which the Standard Code is based.

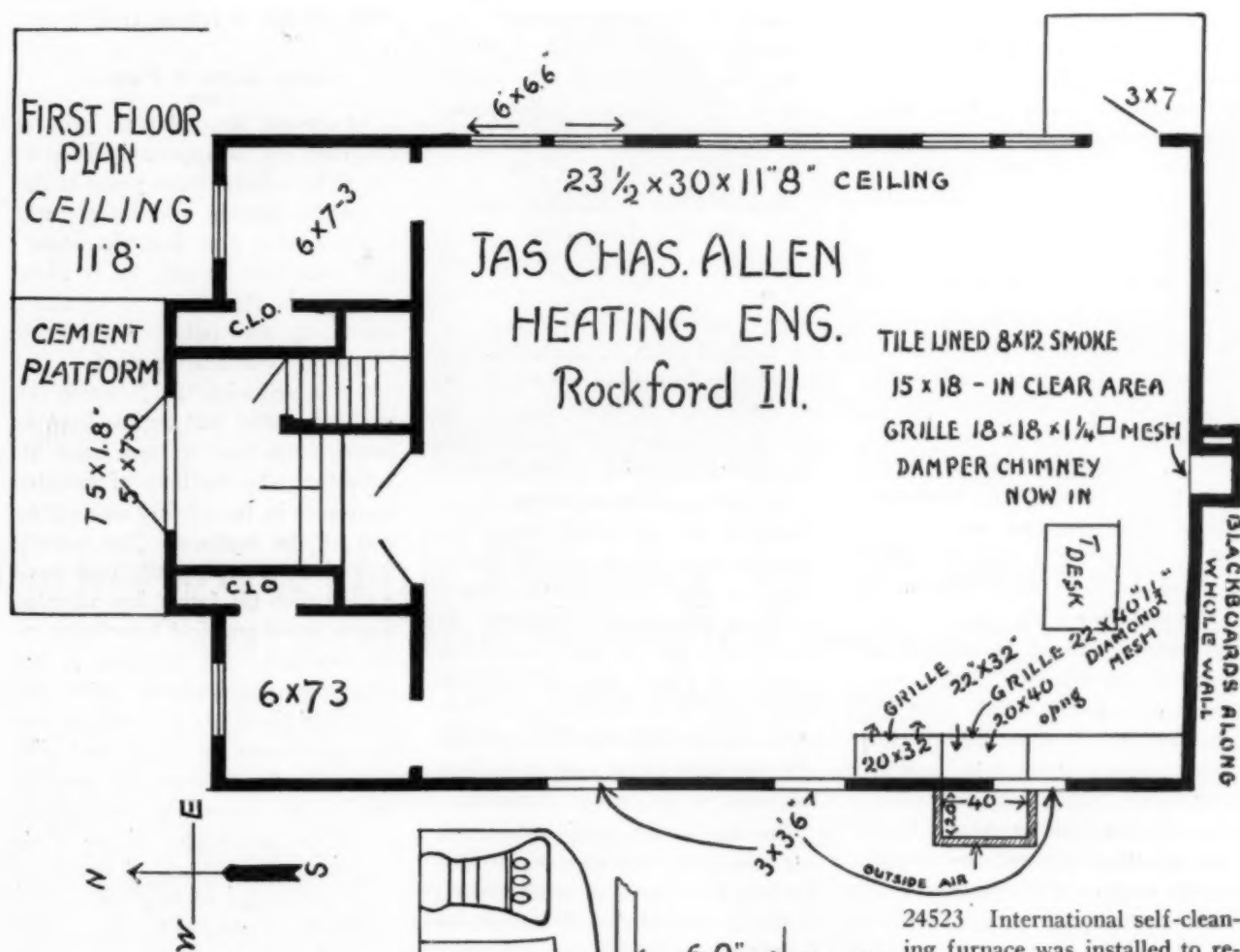
#### How An Unusual Reduction Caused Difficulties

Not long ago I was called by a dealer to visit a house in which a competitor had installed a furnace.

The system would not heat. In looking over the return air, I found that the faces in the floor were ample for the amount of air taken off the top of furnace. However, the 195 square inches in cold air grille was cut to a cross area through joist of 126 square inches, or tak-



Detailed Layout of the School Heating Job put in by R. J. Moscrop



ing 25% as the elliptical area = 96 square inches. The 445 square inch grille was then taken into the joist, reducing it to 192 square inches, then into a square box 8x22" and carried to the furnace through an 18" pipe without a boot, just stuck into the casing with an 18" elbow.

Now figure up 96 plus 192 — 288 square inches of air was all that could possibly get back to the furnace. What was the result? This job would not heat. The owner, a college graduate, could not understand it and blamed it to warm air. When I sat down with the customer and the dealer, who accompanied me to the home, and explained to him the application of the Code, going over every room with him as I figured the rooms, using the Code, explained every step, the reason for each operation, he was sold on warm air. I am sure he will be able to convince the dealer who installed the job that the latter

is wrong, and the result will be a remodeled job that is entirely satisfactory to the home owner and a job that will be a credit to warm air heating.

### Doctor is Converted to Use of Warm Air

Some time ago I was asked by a dealer to go to a doctor's home, that needed a new furnace. The doctor thought his home was more adapted to the use of steam or hot water than warm air. I found a bedroom and bath on the first floor that had a 12" run to them, 27 feet long. These rooms had not been heated; they had been abandoned. The doctor wanted warm air if the one room and bath could be heated. The basement was 6' 8" in clear—rather low for so long a run.

How could we remedy this? A

24523 International self-cleaning furnace was installed to replace the 30" house stove type furnace, which was burned out.

In this case a funnel was used to catch all the air from the combustion chamber, turning it into the 12" lead, a return box 10"x18" of the capacity of a 14" pipe was used, brought back to the furnace and dropped through a 14" pipe into a boot on furnace casing.

The result is the room heats in all kinds of windy or cold weather. The owner is satisfied, the dealer got his money and the furnace manufacturer has not received a kick.

### Some Accomplished Furnace Installers

So you see, where the quadrangle might have been dissatisfied, now every one of the four are pleased with the job. Anyone who doubts this assertion may ask Dr. Herrity, the owner, or Mr. Oscar Coykendall, in charge of the furnace department of C. E. Armstrong & Sons, both of Clinton, Iowa.

Mr. R. J. Moscrop, 414 Elm



Street, Rockford, Illinois, has been in the furnace business so long that some of the kids whose mothers have cookie tins made by Dick think Dick is the original "Santa." Dick is past 60 years of age. When the Code was brought to his notice he went to the bottom of it, then said, "I am for it."

The West Height District No. 95 school wanted a new heater. The committee called Dick in. "Can this school be heated uniformly, using a furnace in basement?" he was asked. Dick, who came from Canada, straightened up to his 6 feet plus, looked the chairman square in the eyes and said: "Yes, and if it don't, I'll take the plant out and it won't cost you a cent."

Several schools in the vicinity had room heaters, because their basement installations would not heat satisfactorily. Dick got the job, installed it according to the Code as issued from State Superintendent of Schools Blair's office. This is same as Standard Code only the cubic contents are divided by 400 to give two changes of air per hour in place of one, as used for residences.

The result of the installation is that every part of the school room is heated uniformly. The heat enters the room 6 feet above the floor, as shown in interior view. Below is a foot warmer that is valved, to be opened as children come to warm feet when entering school. The return from the room is through grille under bookcase which enters into return to furnace. This also connects to the outside air intake, properly dampered (see plans, also photo of school with plans and photos). This should be plain to any dealer.

The West View school, District No. 68, located in Number 2 to Beloit, two miles north of Rockford, Illinois, is another school that is heated with an International Carton furnace. Dick don't confine his heating to schools, but is heating some of the most beautiful residences in Rockford with International Carton self-cleaning furnaces. Note photo of residence of Ray

Johnson, 412 London Avenue.

Another Rockford dealer who is young in ideas but on the sunny side of 60, is Edward J. Johnston, 417 No. Hossman Street, Rockford, Illinois.

#### Another Furnace Installer with Envious Reputation

Edward J. Johnston, warm air heating and sheet metal contractor of Rockford, Illinois, is one of the old established dealers, who has an enviable reputation in Rockford for his knowledge of warm air heating and sheet metal work, square dealing and conscientious workmanship.

Mr. Johnston, an experienced mechanic of the old school, began his experience at the age of 17, starting as an apprentice with the Henry N. Starr Hardware Company, in Rockford. Seven years with this firm soon fitted him out with a knowledge of the trade that extended to his foremanship of a number of large sheet metal jobs on various buildings in and about Rockford.

Previous to his going in business for himself he was with the Snyder Heating Company for several years, installing hundreds of underfeed furnaces, which that firm was having great success with at that time.

In 1912 Mr. Johnston took over the Snyder Heating Company stand at 123 N. Court Street, where he remained with a successful business until 1917, whence he moved into a new building which he erected at 417 N. Horsman Street, of most convenient arrangement for the heating and sheet metal work and fully equipped.

For the past several years Mr. Johnston has been an International dealer and of late he has been installing the Economy furnace.

Mr. Johnston makes mention of the two first International furnaces he installed in Rockford, two 20" furnaces in a double house erected by J. Henry Allen in 1895 at 318 Park Avenue. The heating layout was figured at the time by me.

Each furnace on this job was required to heat 13,260 cubic feet, and these furnaces, still in operation, have required no repairs other than smokepipe and grate bars.

This job has a return from every room.

#### Lauds Standard Furnace Code

At present Mr. Johnston, who is 59 years old, is apparently in condition for several more years in the warm air heating and sheet metal business, and now that the Standard Code has arrived, he is more enthusiastic than ever to continue satisfying the public with good Standard Code heating work.

Associated with Mr. Johnston for the entire time that he has been in business has been his son, Leon M. Johnston, who has been of valuable assistance in the clerical and selling end of the business. The experience that he has gained from association with his father has afforded him a most practical knowledge of the business. An advocate of and intelligently acquainted with the Standard Code, Mr. Johnston misses no opportunity to figure and promote the Code whenever possible, and in this respect he has emphasized the advantages of the Code installation a number of times before gatherings of real estate men and builders when he has been called upon for information.

A slogan that the Johnston firm has long used in their advertising has been, "No Furnace Is Better Than the Installation," and it is safe to say that they may add, "No Installation Is Better Than a Standard Code Installation."

Mr. Johnston is an active member of the Contractors' Association of Rockford, Illinois.

#### Majority Warm Air Furnace Installers Say Manufacturers' Letters Help Sales

Although the majority of warm air furnace dealers replied in the affirmative to AMERICAN ARTISAN questionnaire, asking, "Do you consider the direct sales letters sent out by the manufacturers of assistance to you in closing sales?" it was noted that among the 34.5 per cent minority were many of the class "A" and "B+" installers. Fifty-seven per cent of the installers answered yea, while the remaining 7 per cent did not answer.



George Harms

## Reviewing the Passing of Twenty-five Years in the Furnace Industry

*Last Fifteen Years Have Been Most Fruitful of Results Beneficial to All Concerned*

By GEORGE HARMS, Secretary, F. Meyer & Brother Co.

**G**REAT development in heating by warm air has taken place since the beginning of the twentieth century. At that time there were already many *hot air* furnaces used. Many jobs were installed that were considered satisfactory, in spite of poor installation.

We have but recently read of an R. & B. furnace which had been in use for seventy-five years, heating a church in New York. It is very doubtful if this furnace was installed according to present-day methods, but it is also quite possible that the people attending this church were more concerned about Gospel preaching and hymn singing than they were about proper heating, but the fact remains the furnace was in use three-fourths of a century.

With no reflection on the manufacturer of this very old furnace, nor on the installers, I assume that it was put up in the then usual manner by guess and by garsh. I don't want anyone to accuse me of personal knowledge seventy-five years ago, but I have installed furnaces more than forty years and I very well remember the work done at that time.

Less than twenty-five years ago very little improvement was made in the industry; in fact, up to fifteen years back no determined effort was made to put warm air heating where it belonged.

### **Better Warm Air Heating Movement Young**

Two men are entitled to very much credit for the movement for better heating. These men, through their untiring efforts, have brought about a great change. They are Harry Hussie of Omaha, Nebraska, and Allen Williams of Columbus, Ohio.

It was Harry Hussie who, as chairman of the Hot Air Furnace Committee of the National Association of Sheet Metal Contractors, brought the furnace manufacturers together. Allen Williams, as secretary, has so far kept them in line.

The several associations of furnace manufacturers, jobbers and installers have spent much time and money in study and research.

Next in importance is the work of the Code Committee in preparing the Standard Code of Furnace Installation. The furnace installers are recognizing the fact that good furnaces installed according to the

Standard Code are an assurance of perfect heating for one's customers and a source of profit to them. The furnace rating formula is another distinct step forward.

Now, again referring to the old furnace that was in use for seventy-five years under adverse conditions, what may be expected of a present-day warm air furnace, built scientifically correct, installed according to recognized methods, every pipe, register, etc., being of proper size and style?

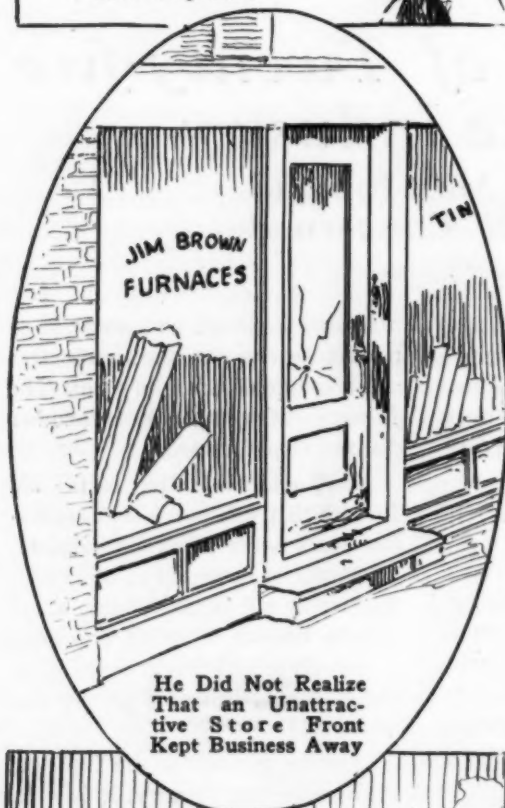
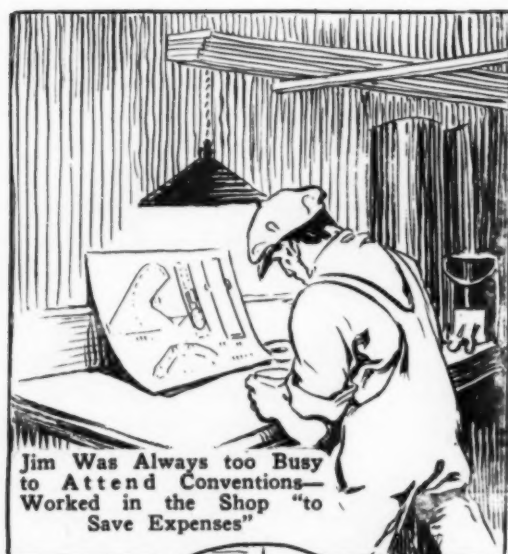
Looking forward in the future to the twenty-first century, it is quite reasonable to expect that furnaces *now* properly installed will be in use at that time and excite very little comment, but be a matter of fact.

### **Moral**

Capitalize on the research work that is putting warm air heating where it rightfully belongs; tie up to the publicity created by the manufacturers, and install furnaces strictly in accordance with the Standard Code.

### **Results**

Well heated homes, satisfied customers, good volume of business at a fair margin of profit.



# Jim Takes the Step from “Furnace Man”

By J. F. JOHNSON

I MET Jim Brown some years ago at one of the first conventions I ever attended. Of course, his real name isn't Jim Brown, but let's call him that, because if I gave his real name, he might feel like the “hero” of a success story, which is not the primary purpose of this article.

Jim at that time was about forty or forty-five years old, married and proud of his three sons. “He was doing a fine furnace business,” then, he said, and was busy as the dickens; in fact he wouldn't be at the convention now if he had not promised a fellow dealer he would attend. His wife had also urged him to go.

His shop, then as now, is in “Podunk,” Iowa, (and, of course, that isn't the town, either) and he asked that I call on him some time.

I happened to be in Jim's town not long after that, but I had already forgotten about calling on him. The reason why I had forgotten was that from our conversation I had learned that his shop and methods of doing business were just like hundreds of other unprogressive men in the business.

But I got twisted around that afternoon on the way to catch my train. Yes, I went down one side street, turned down another, still more dismal looking than the first, and there on a very dirty window was an almost obliterated sign, “Jim Brown, Furnaces.” The other half of the double window bore a sign which read “Tin Shop.”

I now saw that the railroad tracks were just a half block away so I trotted along, thinking to myself “too bad, he could at least wash his windows and invest a few dollars in new signs.” James H. Brown, Warm Air Heating Contractor—that I thought would look better and mean much more. And for the other window, “General Sheet Metal Contractor”—that would tell a better story and add dignity, I thought.

That all comes back to me now, because I ran into Jim just a few weeks ago at the Urbana meeting of the National Warm Air Heating and Ventilating Association.

I was curious to know if Jim had washed his shop windows since I had seen them—I had a notion he had. He looked prosperous and was taking such an active part in a warm air heating discussion in the hotel lobby that I almost expected to learn that he had an electric sign about his establishment.



# to the Warm Air Heating Contractor and Finds It Easy

So I cornered him. Picking up a thread of the argument which I had overheard, I asked Jim about it.

"Yes," he said, "I got wise to myself. Everybody I did work for swore by me. I had followed the game since I was a boy and knew as much about furnaces as anybody. The thing I didn't realize though, was that there were hundreds of other people in my territory who never got to know me or what I knew about warm air heating.

"But I saw the work the associations were doing and I saw that I had to step up or out and I decided to step up.

"And it was easier than I had expected. First, I got a better location for my business and made it as clean and attractive as any in town. I designed and made a large sheet metal sign and had the best sign man in town do the lettering and dolling up. I called in my newspaperman and got my advertising on a regular consistent basis.

"I began taking advantage of dealer helps and got the manufacturers' salesmen and engineers to help me. I lined up with the National Warm Air Heating and Ventilating Association to do Standard Code installations, because I began to understand the value of the work being done and I naturally saw the opportunity of cashing in on their National advertising.

"I put in six jobs this year that came through the association.

"I've read every word printed about the research work being done down here at the university. I made my first trip last year and this year's meeting is more than enough to make me come down next year.

"You know," he said, "I've learned how to *sell* warm air heating and not long ago I couldn't say a word about it to my prospects—that is, I couldn't convince them that it is the best kind of heating and now I do all the talking.

"You know," he said, and now Jim was all wound up, "It's a wonder to me that more fellows don't get wise to themselves; why, I keep right on talking warm air heating, Code installations, and all that it means so that my prospects are so interested that the price is the least of my worries."

"Say, do you ever get down to Podunk—I want you to come in and see me."

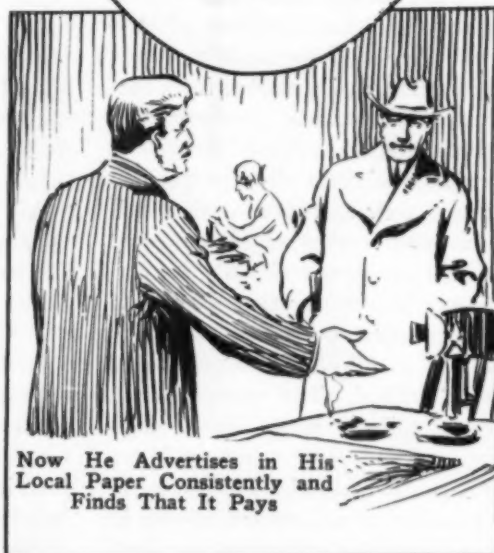
This time I won't forget Jim.



Jim Now Learns a Great Deal From Convention Meetings and Rarely Misses One



His Store Front and Office Now Attract Business and Command Respect



Now He Advertises in His Local Paper Consistently and Finds That It Pays

# Heating Industrial Buildings With Warm Air Coming Into Vogue

## Manufacturers to Teach Installers to Sell and Install Industrial Heating Units

By J. C. MILES, Vice President, Warm Air Furnace Fan Co.

**T**HE possibilities in industrial heating have become quite well recognized by the warm air heating industry. Several of the largest furnace manufacturers have already developed and advertised units constructed especially for the purpose of heating industrial plants.

These far-seeing furnace manufacturers have recognized that there is an enormous waste of heat by placing radiators on the outside walls of industrial buildings, they have also come to realize that the sensible and economical things to do is to endeavor to heat first of all that part of the building which is occupied, leaving for the roof and outside walls only the heat that cannot be utilized by the interior.

### Industrial Plant Offers Enormous Market

The warm air furnace in conjunction with a properly designed fan, to insure proper circulation and furnace protection, has proved to be the solution to this problem.

In view of the thousands of industrial plants that are constructed each year, there would appear to be a tremendous outlet for the warm air furnace, which has heretofore been left entirely to the steam fitter.

Sufficient investigation of the condition has been made to prove the existence of a market for something of this nature. The manufacturers alluded to have hit upon a program wherein they purpose to give to their accredited dealers sufficient engineering service, data, and advertising matter to make it comparatively easy for their dealers to present to the prospect the proposition in a comprehensive and logical way. Indeed, these manufacturers are planning a service both in engineering and sales which will not only assist the dealer in making the first sale, but will show him how he can do the job entirely alone.

### Illustrating the New Plan in Operation

To illustrate this service: The manager of the H. O. Tair Furnace Company, of Evansville, Indiana, learned that there was a candle factory to be built in his town, and having previously been told of the wonderful advantages of convection heat, air motion, simplicity, freedom from freezing, flexibility for early fall and late spring, etc., in the warm air furnace from representatives of the furnace manufacturer, Mr. Tair resolved to try his luck on a sale of this kind and made an appointment with the manager of the candle company. This being the first job, he took the furnace traveler along with him to learn how it is done.

"Mr. Brown," said Mr. Tair, "My name is H. O. Tair and this is Mr. S. A. Lesservice, of the W. I. Dawake Furnace Company. Mr. Lesservice has brought to my attention an idea that I am positive you will be interested in. This thing pertains to industrial heating."

"You probably know that I have been identified with the heating field in a small way for a great many years by reason of its close proximity to the sheet metal trade in which you know, I have been engaged in a very large way—ventilating work, blow pipe work, and dust collecting systems, and while this idea is comparatively new to me, it is very popular in other parts of the country."

### Mr. Brown Voices His Objection to Hot Air

"Yes," said Mr. Brown, "I know Mr. Tair, but you are in the hot air furnace business and I have decided on a steam heating system. I am sure I do not want hot air heat in this building, the building is entirely too long for that. You know, I have a hot air furnace in my house, and

while the quality of the air is apparently better than a steam system, at the same time we have always had difficulty in heating several rooms. I mean rooms where the pipes are long or crooked. Then too, we have always had more or less trouble on the two west rooms when the wind comes from that direction. I don't mean to criticize the hot air furnace for small homes; I think it is well worth the money, I only paid \$420 for my system and a vapor system would have cost me \$1,300, but I am positive it will not suit my purpose here, and as I am busy, I should prefer not to waste my time nor yours.

### Presenting the Quality Sales Argument

"But Mr. Brown," broke in Mr. Lesservice, "you have not heard my story, and until you do I am sure, and I think you will agree with me, you are not in a position to judge."

"There would have been a great economic loss to the world if no one would have listened to Mr. Bell's telephone story, and I believe that I can show you a convenience and economic value almost parallel to your telephone."

"In the first place you are not interested in the particular kind of a system you put in this building; you are interested in the quantity, quality and distribution of the heat itself. The cost of operation and maintenance of the plant, as well as the floor space it is going to take up; what its effect on your production is what you are really interested in.

"As to quantity of heat, we will take your plans and turn them over to our engineering department, which consists of young graduate engineers, supervised by an older head. These engineers are not in the least interested in the sale of this job. All they are interested in is

that they work out the very best system they know how to design. They will accurately measure all of the exposed surface, outside wall, glass, roof, skylight, floor, doors, etc., and calculate the building for its heat loss just as the steam man would. It is true there is not as much heat loss from this kind of a system, but that is your factor of safety. Then too, we will give you a satisfactory guarantee of your own writing.

#### The Sales Story Unfolds Still Further

"Regarding the quality of the air, I can say, science tells us and it is accepted as a fact, that convection heat is the most satisfactory form of heating. If you doubt this, I will

you something quite interesting in this regard.

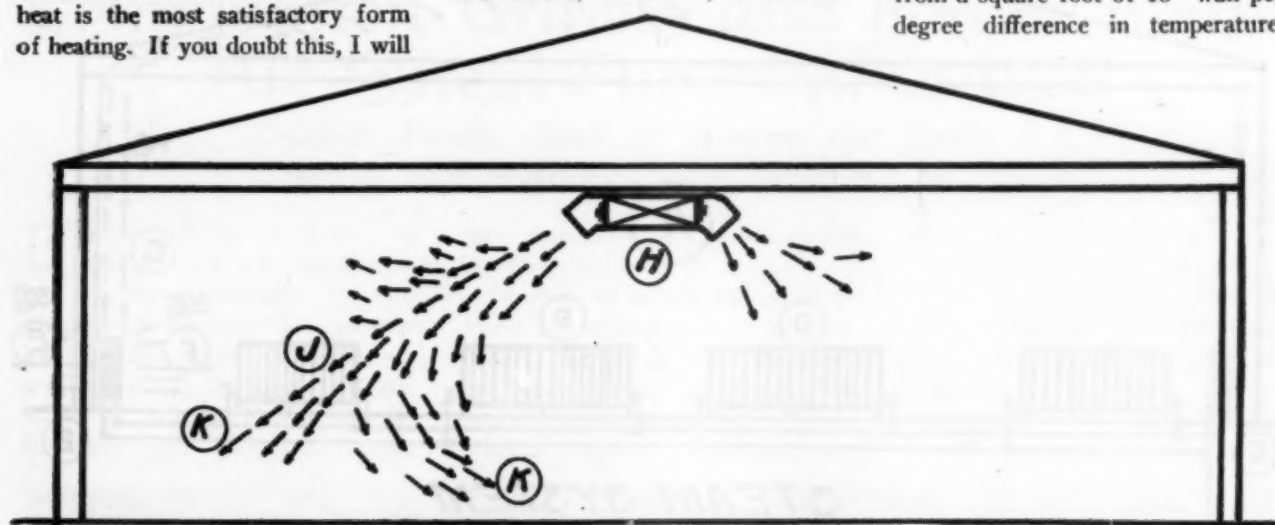
"You say you want a steam heating system. Look at this diagram of radiator heating service and see what you actually buy in a steam system. Here is a cross section of a typical factory building. (a) Almost exactly as your building would look in cross section. (b) Here is a radiator along this side of the wall. (c) Here is a radiator along this side of the wall. (d) And here is a front view of a series of radiators along the end wall. All of them 2 or 3 inches from the wall and 12 to 18 inches from the floor. heated and, of course, is utilized.

But this 30% (pointing in opposite direction) (e) will obviously pay back less than 10% so here we have a deplorable overhead expense. Now 40% follows up along the wall, as indicated (g)—(aside) ('if there are any bugs in this argument so far no one has ever seen them yet.') Now what happened to the 40% which traveled up along the wall?

#### By This Prospect Is Showing Definite Signs of Interest

"Let us just follow the heating engineer through his calculation of a one-foot strip from the floor to the eave of the roof:

"The amount of heat given off from a square foot of 16" wall per degree difference in temperature,



### FORCED AIR SYSTEM

let you read it from this textbook, which I used in college. You probably know that convection heat is the heat in the air as apart from radiant heat which comes from the radiator. Radiant heat, you probably know, is quite irritating when one sits near the radiator.

"Now the cost of operation is your overhead, and as you know, the watchwords for overhead are, 'keep it down.' Therefore, Mr. Brown, if you want to cut your overhead in this new building, one of the best ways to do it is to cut its heating cost. As you know, heating costs begin about September 15 and continue until April 15. The best way to do this, I think, would be to dissipate as little heat through the outside walls, glass and roof surface as possible—Let me show

Now, so far as I have gone I am correct, am I not? (looking into Brown's face.)

"Now, Mr. Brown, there are two kinds of heat that come from a radiator: Radiant heat, which is 60%, and convection heat, which is 40% of the whole. We will all have to admit that a radiator is as hot on one side as it is the other. Then 30% of the total goes in this direction (e) and 30% goes in this direction (f) (marking arrows pointing right and left). Then, (making a number of arrows pointing vertically upward and angling to the contour of the roof) 40% goes in this direction (g). Now this 30% (pointing to the interior of the building), (f) pays a dividend of 100%, because it travels toward that part of the building we want

between the inside and the outside of the building is—.25 or one ¼ of a heat unit (B.t.u.) per hour. Now the ceiling is 16' and  $16 \times .25 = 4$ . This is four heat units loss per linear foot of your wall 16' high. Now, what is the temperature difference between the inside and the outside? Let us estimate it. The temperature of the radiator is 216°F. and I know the air leaving the radiator is usually 160° so we will estimate the average difference on a zero day as 120°. then we have  $120 \times 4 = 480$  B.t.u. per hour. If the wall is 100' long, it will be 48,000 and if you have four walls, the same size, we have 192,000 B.t.u. per hour.

"This, you will understand, is the least of your loss, for the roof loss is almost three times that of the wall, and glass surface is more than



four times that of the wall, so you will see I am modest.

#### Outlining What Warm Air System Will Do

"Now, Mr. Brown, this is exactly what takes place with a radiator system and this is what the engineer must provide for and what you must pay for and I think you will agree, it is *overhead*."

"Now here is what we propose to do:

"We are going to produce all of our heat in an inclosed chamber and convect it all by forcing the air directly against the heating surface, then we bring this convection heat

difference is  $60^\circ$  so we have  $60 \times 4 = 120$  B.t.u. as against 480, or 12,000 for 100 feet as against 48,000, for four walls 48,000 as against 192,000. Then the difference here in wall alone is 144,000 B.t.u. per hour, all of which shows in comparison, three times as much heat for one system as the other.

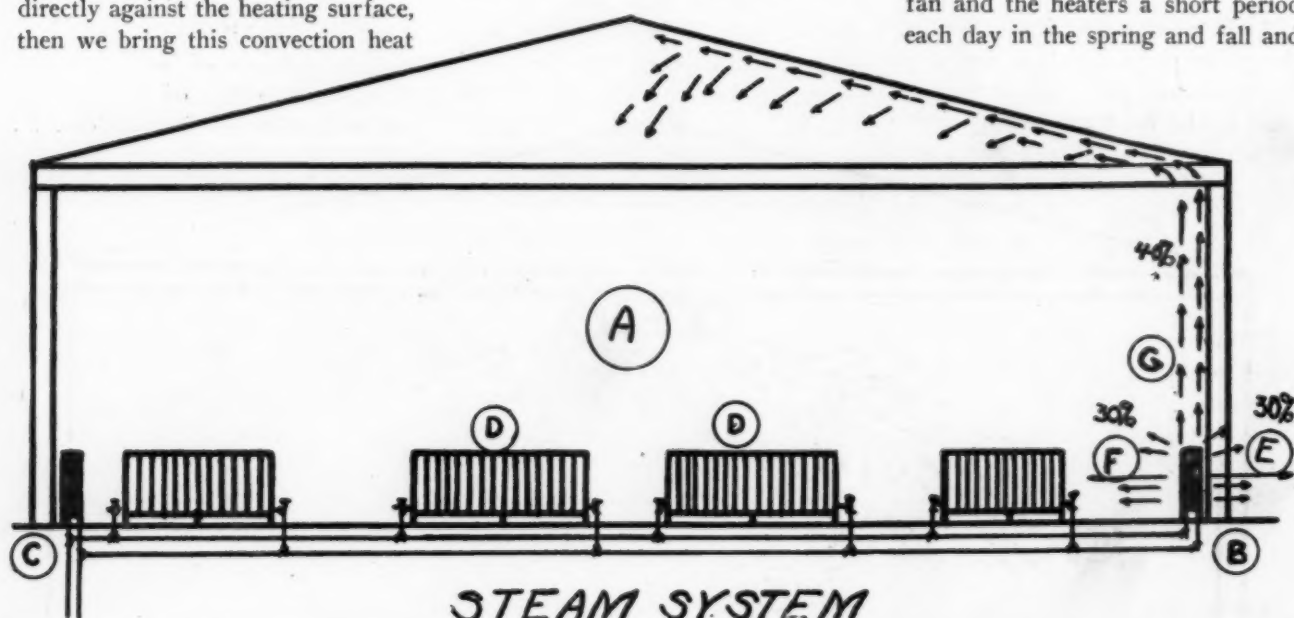
"To my mind, this is an excellent place to start cutting the *overhead*."

#### Economy of Floor Space

"Then consider the floor space: At least eight inches of your floor

Get a contract written (smilingly) so you can't raise the price on me again."

Mr. Lesservice, "You see, Mr. Brown, this is a snap judgment price and I think it is too low, but it may be that Mr. Tair would take the job as an advertisement if you will agree to brag about it if it is all we say it is. You see, I did not tell you that we force the air to all parts of the building with a fan, which does not have to be run all of the time. With this system you only run the fan and the heaters a short period each day in the spring and fall and



(hot air, if you please) up along the ceiling in a conduit (h) and distribute it down through the center of the building (j), forcing it at proper velocity at  $45^\circ$  angle toward that part of the building (k) you want heated. Leaving only for losses through the walls, roof, and windows, etc., the heat that cannot possibly be utilized by the interior and content of the building.

"Now, let us follow an engineer's calculation and find out what takes place as compared to the radiator system.

"I understand, on account of the nature of your work, you wish to maintain  $60^\circ$  in this building. Therefore, Mr. Brown, the warmest part of your building could not average more than  $60^\circ$ , could it? (wait for an answer). Well, a one foot strip of wall would be  $.25 \times 16 = 4$ , then at zero, our temperature

space is taken up all around the four walls. Take 16" off the length of your building and  $16^\circ$  off the width of your building and you will find some more *overhead* in unavailable floor space, and by the way, what would happen to a box of expensive candles if they were set close to or within two feet of a radiator?"

Mr. Brown excitedly, "What will it cost to heat this building?"

Mr. Tair, wildly guessing, "About \$1,785."

Mr. Brown, "Put it in, put it in."

Mr. Lesservice, tramping on Tair's foot, "But this building of yours will take two of these systems making a total of \$3,570."

Mr. Brown, "Of course, of course. My building is almost ready when can you start—three weeks before you even start? Oh shaw! Well, get busy and hurry it along.

even in winter it is not necessary to run the fan all of the time. Nor have I told you that you can run the fan in summer to cool the building."

#### Introducing New Possibilities for Cooling

Mr. Brown, "Can you do that? Wonderful. Hurry up with your plans and contract and then we will talk about this cooling idea. This cooling phase gives me an idea I want to think over. You see, we do not work in the hot months on account of the candles being too soft to handle."

With animation, "Well, well, well, it surely does pay to listen to these salesmen, doesn't it?"

"Thank you very much, glad to have met you, hurry back, etc." Exit Mr. Tair and Mr. Lesservice.

Mr. Lesservice, "Where are the plans, Tair?"

"Oh—I forgot them."

Mr. Lesservice, "You go back and get them and I will climb in the bus and wait for you. If I went back there he would get me started on a cooling system and I want our engineers to work it out for him before I talk about it. There are tremendous possibilities here. Tremendous possibilities."

"Ye Gods, I wonder if there is a Candle Makers' Association like the furnace men have. I bet Allen Williams will know—Hello, did you get 'em and gimme a Camel."

The sequel to this would be Mr. Tair locating a new ten story building and calling on the architect, owner or contractor and explaining a new unit for temporary heating and dehydrating (drying) new buildings. (See article in an early issue.)

This is service that is being rendered by the furnace manufacturers who are abreast with the trend of the times and unless we are poor guessers this service, and this service alone, will get and hold the better class dealers throughout the country.

If there is any one in the furnace industry who thinks the warm air furnace is still in the "gutter" or on the tonnage basis, we would suggest that he get one of these manufacturers' pamphlets on Force Air Heating on temporary heating and dehydrating (in fact we recommend that he do this) a copy of the preamble to the standard code which was passed by Warm Air Furnace Manufacturers Association, Wednesday, December 1st, 1926, and study it for their full intent and purpose. There is a surprise in store for him.

## Combination Gravity and Forced Warm Air System Functioning Well

*Owner Finds Cost of Warm Air Only 1/3 That of Hot Water System Without Sacrifice*

**E**XPERIENCES in warm air heating system installation practice that have come to our attention in the past few months indicate that some manufacturers are not at all confident that the warm air heating system has the flexibility and endurance which

they have led others to believe the system contained.

In order to uphold the belief in warm air heating and its capabilities, we are through the courtesy of the Keith Furnace Company, Des Moines, Iowa, describing a combination gravity and forced air heat-

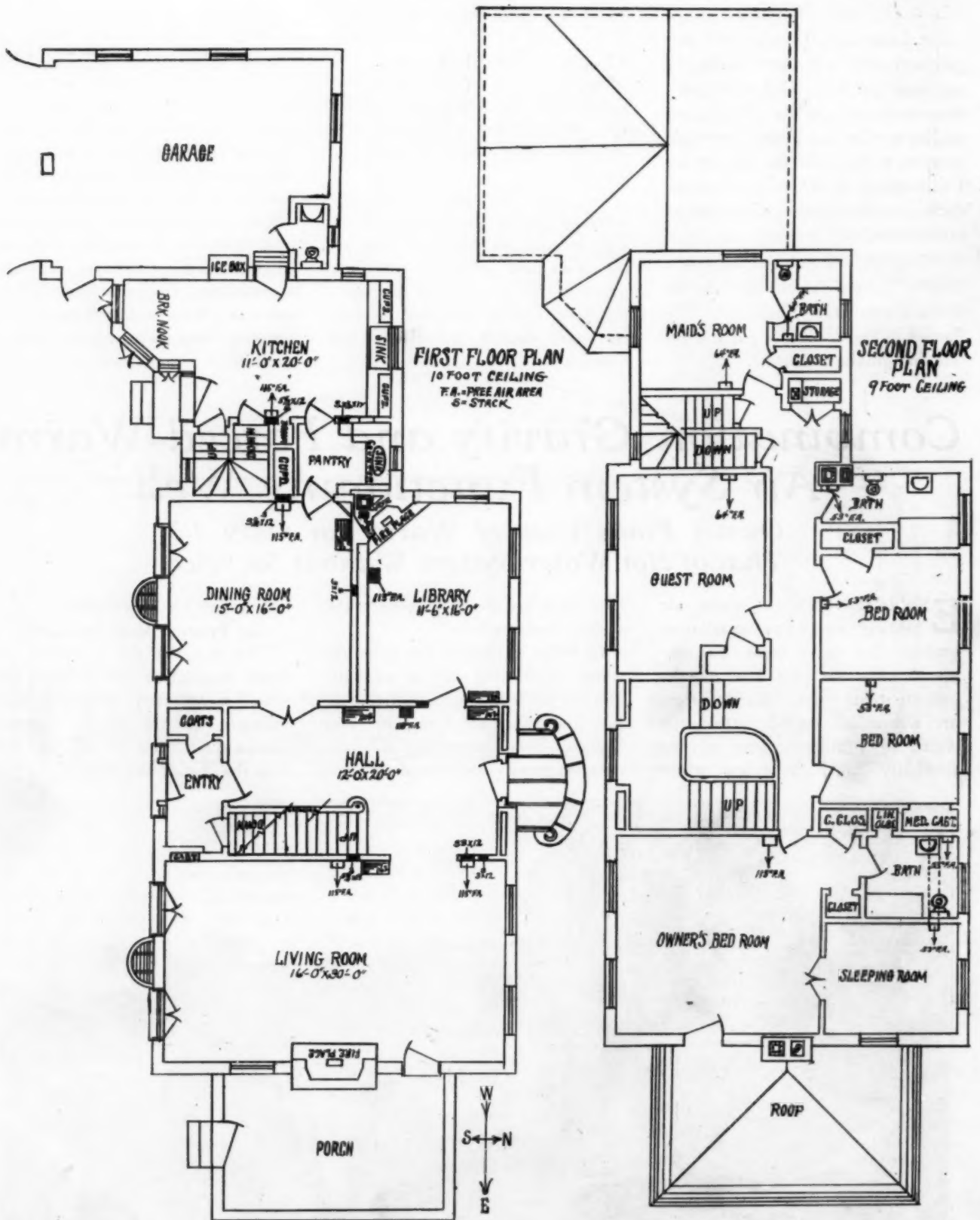
ing system for a residence.

### **Job Presents Many Difficulties**

"We consider this a rather unusual installation for several reasons," writes R. P. Englund, sales manager of the Keith Furnace Company. "First of all, you will note the size of the building, which



Large Residence in which Combination Gravity and Forced Warm Air Heating System was Installed



First and Second Floor Plans Showing Location of Both Cold and Warm Air Ducts in the Combination Gravity and Forced Air Heating System

is 76 feet long, not including the garage, and 30 feet wide. Then, the placing of the cold air ducts presented a difficulty, on account of the furnace location. You see, the

largest amount of cold air supply necessarily had to be taken from one side of the house, which made it rather difficult to get an even distribution of cold air to each boot,

so as to enable us to use two fans of equal size; one in each boot, and also to place the cold air boots on the side of the casing opposite each other, which is considered to be the

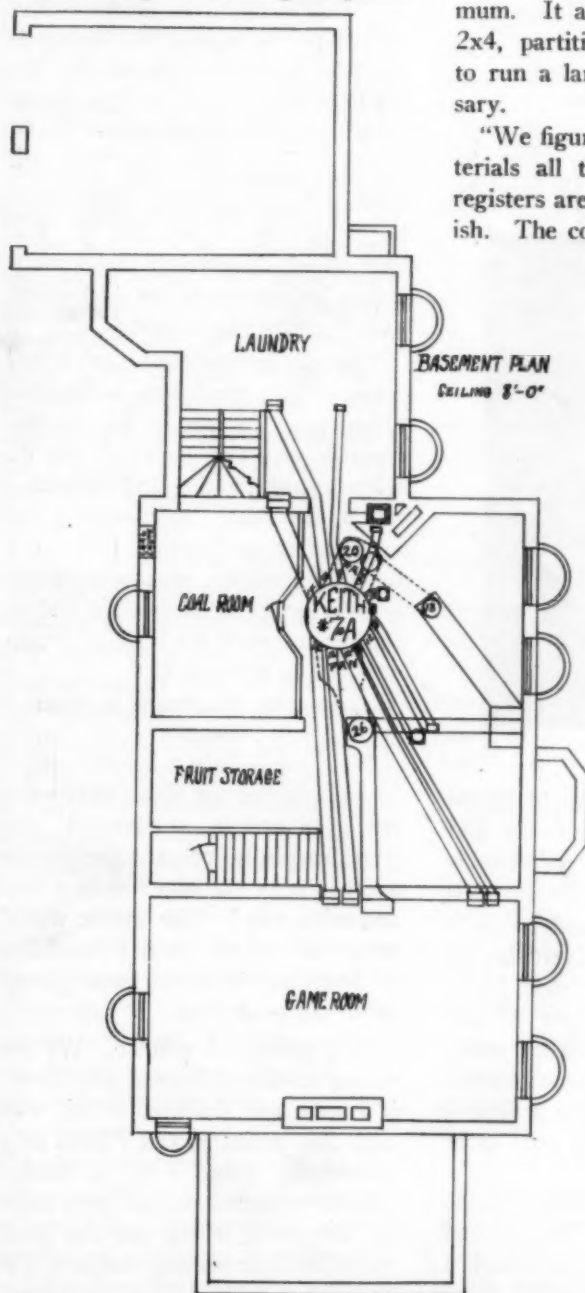


most efficient method to employ.

"There was also a rather limited space in which to place the runs so as to avoid cutting up the coal room, shutting off the head room in the stairway and still come within the partitions above to the first and second floors.

#### Space Limited in Which to Place Runs

"On the other hand, however, this building has some good points



Basement Plan of Warm Air Heating System Installed in Large Residence

Showing Type of Transition Used on the Job

in favor of a warm air heating system. It is unusually well built and the wall construction is such that heat losses are reduced to a minimum. It also has 2x6, instead of 2x4, partitions, which enables us to run a larger stack where necessary.

"We figured the very best of materials all the way through. The registers are all oxidized copper finish. The cold air ducts are of the

very best construction and are made of galvanized iron. They are so placed as to have a downward pitch towards the furnace, at the end of which is connected the round pipe, which also has a gradual downward slope to the cold air boot, as illustrated below.

#### Furnace Equipped with Radiation Shield

"The furnace is cased with a cylindrical bonnet, with side outlet collars. It is equipped with a radiation shield, such as is used in the university tests and described and illustrated in the University of Illinois Bulletin Number 141.

The warm air and cold air pipes are uncovered, except for a narrow strip of asbestos paper around the joints to keep out the dust. All fittings are of best design.

"This entire system, equipped with two automatic furnace fans, costs just a little over one-third as much as a hot water system, according to the owner's own figures, and think of the difference in results. In addition the owner has more and quicker heat at a lesser operating expense. Then, too, it is more healthful, no water pipes to freeze and give trouble, no large unsanitary radiators to stand in the way, easier to operate and a number of other advantages over the hot water system."

#### Here May Be the Secret of Why Many Installers Are Not Making Money

There is certainly a wide variation in the amount allowed for overhead by installers in different parts of the country. Charges for overhead range from 7 per cent to 30 per cent. Here's how they stack up on AMERICAN ARTISAN questionnaire. Only 8 per cent of the total number answering the question charged 30 per cent for overhead; 4 per cent charged 28 to overhead; 24 per cent charged 25; 4 per cent charged 23; 8 per cent charged 22; 16 per cent charged 20; 8 per cent charged 18; 4 per cent charged 17; 16 per cent charged 10; 4 per cent charged 7. Eight per cent of the total number did not wish to answer the question.

# Warm Air Heating Industry Suffering from Internal Trouble

## Must Legislate Code Through and Sell Dealers Thoroughly on Good Installations

By ARTHUR P. LAMNECK, Secretary The W. E. Lamneck Co.

**E**VERY man in the warm air heating industry must awaken to the need to so work as to protect that industry from the attacks of the competitive heating industries. The internal trouble from which we are suffering must be wiped out, before we can hope to do much in the way of expansion. Other industries have already gone through troubles such as we are now experiencing. Some have prospered, others have not. For example:

Just a couple of months ago members of the American Pomological Society, the National Apple Shippers' Association and other groups interested in the raising or selling of apples, banded themselves into a new organization for the purpose of administering a tonic by means of national publicity to the feeble and dwindling apple industry, whose market has been greatly cut into by the strong, consistent sales and advertising effort of the live and ever progressive growers of other fruits.

There was a time when apple was king, but King Apple, like many other kings in history, lost his crown. Those interested, realizing that something had to be done, were forced to lodge a counter attack, in order to save the "kingdom."

A like condition existed in the oak lumber industry. Its members, only last year, decided upon a similar plan, in order to protect oak, the sovereign wood, against the inroads of the strong sales and advertising campaigns engaged in by the walnut, mahogany, gumwood, maple and other lumber producing industries. Many industries and individual manufacturers have gone through similar experiences. Some of them awoke to the need for action in time—others didn't and have passed out of the picture entirely. Upon their tombstones some mighty

interesting epitaphs might be written.

We hope that every manufacturer and dealer in the warm air heating industry, if not already so, will soon awake to the need for concerted effort in our industry, so that it will never fall into the latter class above.

### Advertising Will Not Correct Internal Troubles

We have already taken steps in a national advertising way. But advertising cannot do all. It is up to



A. P. Lamneck

us, collectively and individually, to remedy our weaknesses and strengthen our position against competitive heating methods. Our trouble is an internal one and unless it is remedied, all the advertising in the world cannot overcome it.

Most of us realize our danger. We have done a lot of talking about it, and really a lot of good constructive work. But we're not progressing as we should. We need more action.

The legislative committee of the National Warm Air Heating and Ventilating Association, of which I am a member, has and is doing everything in its power to work out

a feasible method of procedure. But the committee is only a committee and as such can do nothing without the support of the association's members.

Where adverse legislation is working against us, we must stop it. What is more, we must see that favorable legislation is enacted. We have a right to ask our city officials to do so. It is for the public good as well as ourselves.

There was a time when warm air heating was secure, but competition has been busy. It has cut in. We have all felt it, and we'll feel it more unless we restore warm air heating to its rightful place again.

This can be brought about in two ways. With conditions within the industry as they should be, our national advertising campaign can do a lot toward creating and maintaining a favorable consciousness toward warm air heating. But until we, as individuals, see that each and every job we install is right and in conformity with the code, we cannot hope to get very far.

### Contrasting Conditions in Auto Industry

How far would a manufacturer of automobiles get if his cars were not of a certain standard; if one were carefully constructed, while another were put together in a hit-and-miss way? The public would never hear of the good automobiles he built, but it would know plenty about the poor ones.

Our position is similar. We are selling results of finished jobs. Now, if I were not identified in any way with this industry, and I lived in a community where a lot of shoddy jobs were turned out, and your competitors were telling me the good points of their heating methods, I'm sure I'd feel like taking no chances and would install steam or hot

water. Most people feel the same way.

The point here is that any good and constructive work must start from the inside and work out. We have formulated a code, but that code isn't worth a snap of the fingers unless it is adhered to, whether or not there is a law to insist upon it.

How many dealers are following the code? We don't know. But if each, personally, has the interest of the industry and his own future at heart, he will do it.

#### **Manufacturers Must Take Definite Stand**

Manufacturers should take a definite stand—not simply come to the association pow-wows, listen to a lot of good, constructive suggestions, say "I agree," and then go away and forget all about it.

Manufacturers should insist that their dealers adhere to the code and install their furnaces in a way that will reflect credit both to the dealer and himself. He should follow his installation up—not every one, of course—but do a little inspecting in the field—check up on his dealers and where he finds his heating plants not installed properly, to insist that the dealer stop such work or take his dealership away.

This is not theory that I'm talking. It is just common sense. By adhering to a quality standard, conditions of the industry will be bettered and made safe and dealers individually will make more money. Nobody makes money at price cutting and cheap work. Certainly, it is suicide in the end. It acts like a boomerang.

#### **The Industry Can't Wait for Legislation**

We cannot afford to wait for legislation before improving conditions, because political machinery moves slowly, and if we wait to improve conditions until compelling legislation has been enacted, our competitors will have us down and counted out.

Codes have been adopted by the city councils in Columbus, Omaha, Minneapolis, Cincinnati and Indianapolis, and it is under consideration in a number of other cities. That is fine, but it should be in many others.

We have had this code for three or four years and if we move as slowly in the other cities of the country, we'll all be dead and buried before we've accomplished our aim.

Getting the Code adopted is not the biggest thing in the world to accomplish. It just means that all of you in your respective communities must get together; and in order to get together somebody must take the bull by the horns.

Then go to your city councils. There should be no hesitancy here at all. It is not selfish laws you are after. Certainly it will react to your benefit in the end. But you have a right to demand it for the public good. The public should receive a furnace that isn't too small, one that will not create a fire hazard when fired under severe weather conditions. You have a right to demand an air supply from a place inside or out that isn't contaminated. You have a right to demand a rule that a furnace be installed with necessary precaution so that it won't set the owner's house on fire. These things you have a right to demand, because all concerned are going to benefit.

#### **Furnace Men Must Be Sold on Idea**

The first thing we did in Columbus was to get the furnace men together and sell them on the idea. Then we went to the fire department headquarters and found out that their records showed a great many fires had been caused by faulty furnace installations. The question put to them, they said that they would be in favor of a code regulating furnace installation in so far as it relates to the fire department.

Then we went to the board of health and took some of the members out to cellars that were unsanitary. The question put to them, they said they would favor legislation to eliminate such conditions. Then we took in the mayor, the board of fire underwriters and insurance people and sold them on the idea that such legislation was necessary from the standpoint of the public good. An engineer also told us that if every furnace in Colum-

bus was properly installed, that condition alone would save \$350,000 in coal. That is another way in which the public benefits.

Then we went back to the fire department and said, "Here is an ordinance based on recommendations of the board of health, fire department and insurance men." They said they would have the chairman of the safety committee introduce it.

In that way the ordinance came from the fire department and we sat in the background. Six out of seven votes put it through.

#### **Must Legislate Code Through City Councils**

Now that is the way we did it in Columbus—possibly the same way it was done in the other cities. There is to my mind no reason why the same tactics could not be followed elsewhere. But the main thing is to get organized and try. No coöperative movement goes over unless there is coöperation of all concerned or unless each man assumes individual responsibility for its success.

We've got to legislate the code through, but in the meantime let each dealer abide by it, and let each manufacturer insist that their dealers follow it out. Then will warm air heating be above criticism. Then will it again be restored to a secure place. Then can our national advertising and publicity do its best. Then only can we hope for success.

#### **Presenting Evidence Showing That Installers Are Using Code in Greater Numbers**

Warm air furnace installers in increasing numbers are using the Standard Furnace Code. This is shown by the replies to AMERICAN ARTISAN 33rd Furnace Annual Questionnaire, which asked, "Do you use the Standard Code in residence work?"

Of the total number of furnace installers who returned the questionnaire, 76.5 per cent said they did use the Code, leaving 23.5 per cent who did not employ Code methods.

Last year 64.25 per cent answered that they were using the Code.



# Duplex Houses Present Unique Warm Air Heating Problem

*Proper Methods Will Overcome Any Difficulties The May Be Encountered*

**W**E ARE submitting a layout of a duplex heating system. The heating of duplex houses is, in our opinion, a very difficult matter and requires skill in the arrangement of the warm and cold air pipes. In most cases the architect and owner give very little thought to the heating when planning this type of building. The chimneys are placed on outside walls, sometimes both being placed on the same outside wall and alongside the other, and the stairways come in the center of the building where the furnaces should be placed.

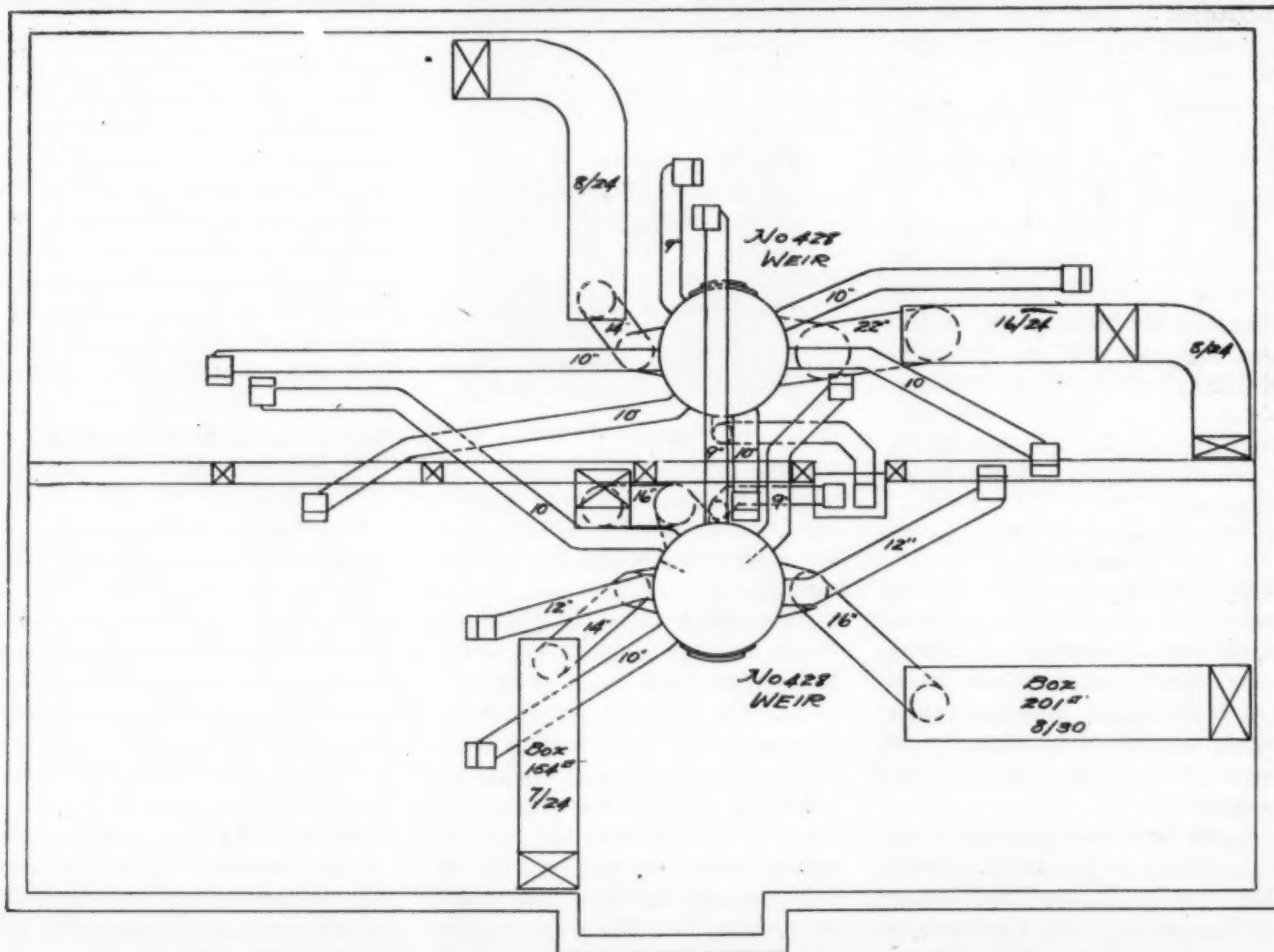
There are some heating contractors who will not attempt to heat

the building with such conditions existing unless the owner and architect make the necessary changes, in order to permit the installation of a job in which they have absolute confidence.

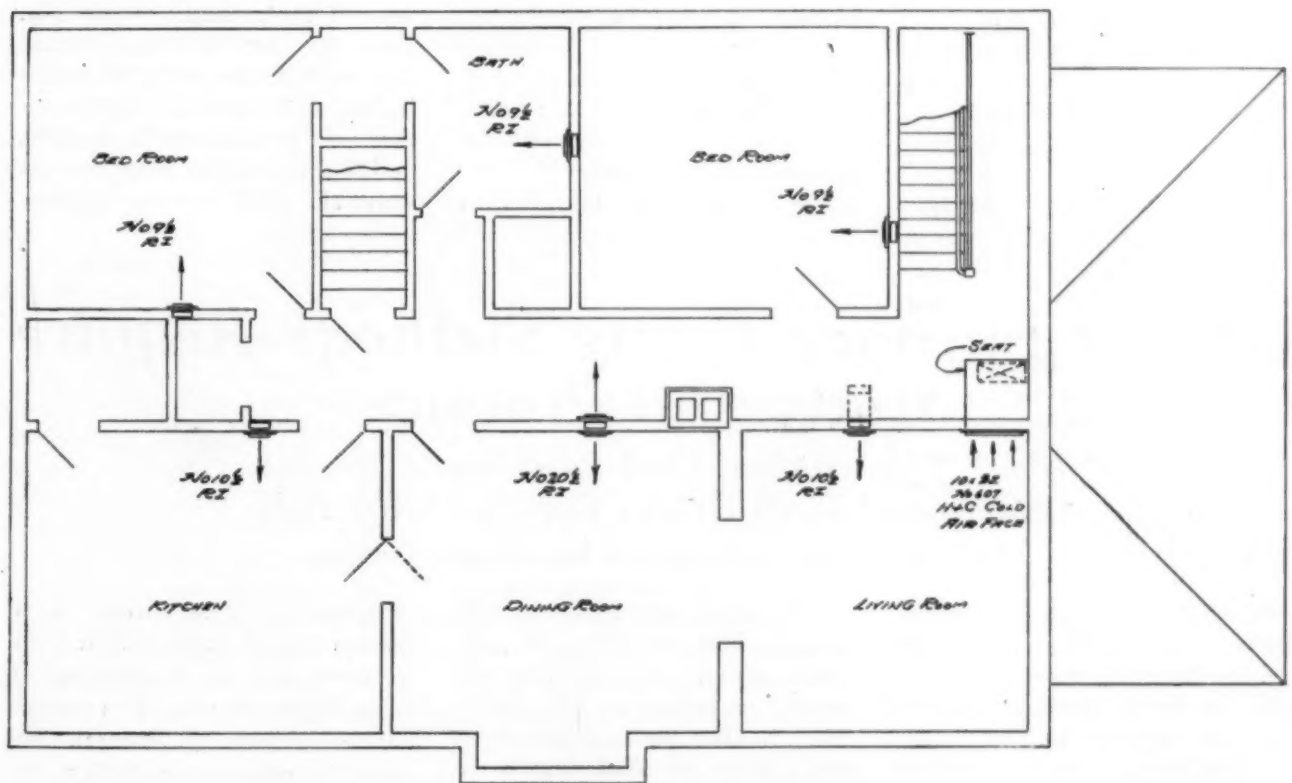
On the other hand, there are contractors who have no respect for the warm air heating industry, only using it as a means of making money, and will install a warm air system under any condition. In such cases we usually find an octopus-like conglomeration of warm and cold air pipes, all tangled together. No consideration whatsoever is given to the Standard Code, as in their opinion the Code does not

affect duplex heating system.

The one big thing in the owner's mind when planning a duplex is conservation of basement space, and for this reason the heating plant is usually pushed over in a corner. As a matter of fact, had a competent heating contractor been consulted, he could easily have convinced the owner that more actual head room and space could have been had if proper arrangements were made for placing the furnaces near the center of the building, so faced to permit warm air pipes being taken off around the rear and sides of hood instead of over the front, where circulation is impeded



Basement Plan of Duplex Heating System Installed by F. Hock & Sons, Belleville, Illinois



**Second Floor of Belleville, Illinois, Residence**

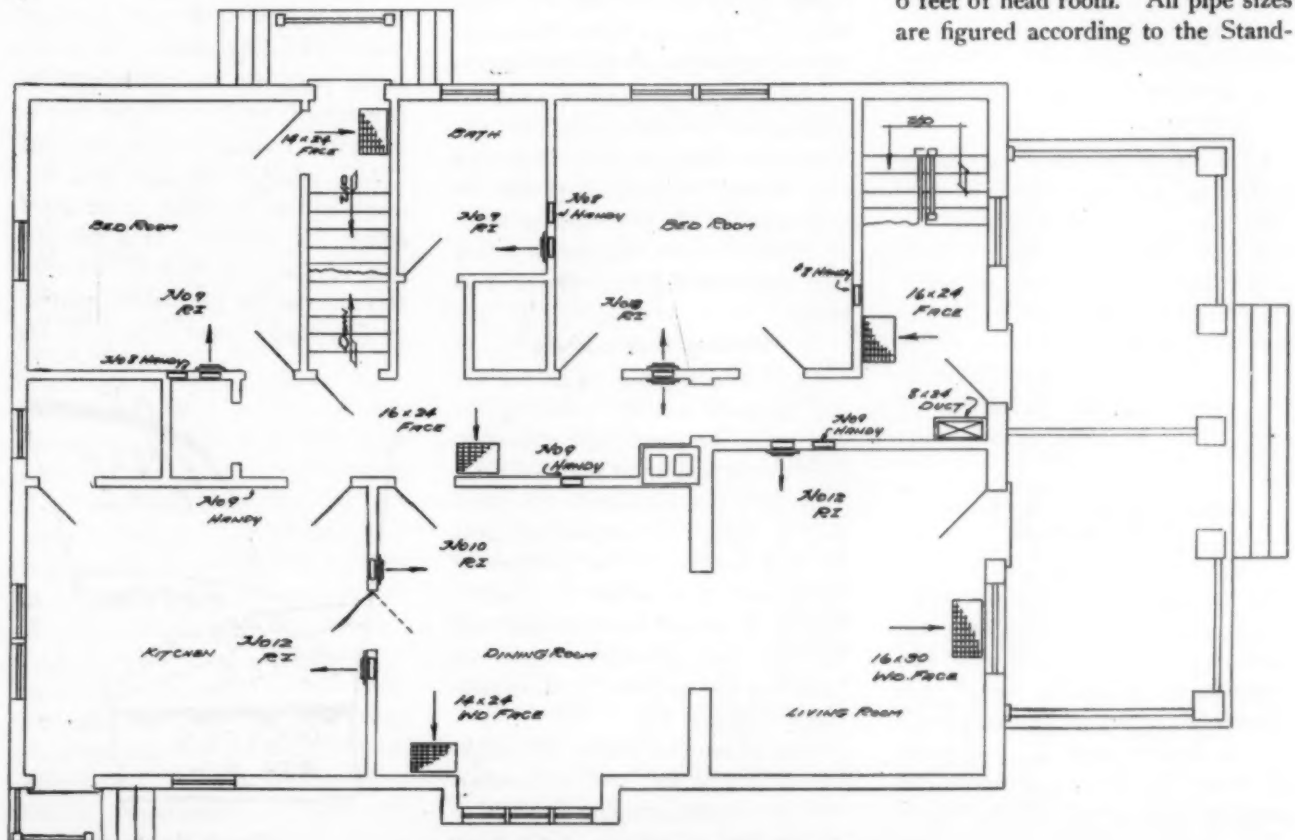
on account of fire and ash tubes.

## Duplex System Eliminates Undesirables

You will note the heating system

shown herein practically eliminates all of these undesirable features. The furnaces are placed back to back, with centrally located flues,

and the warm air pipes are mostly short and direct, with only one pipe crossing another. Cold air ducts are of galvanized iron and leave over 6 feet of head room. All pipe sizes are figured according to the Stand-



**First Floor Plan of Belleville, Illinois, Residence**

ard Code which is adhered to.

The partitions carrying pipes to kitchen, dining room and living room on second floor are six inches, in order to permit the use of Number 9 stacks.

The installation as a whole takes up a comparatively small amount

of basement space when considering the number of rooms to be heated. Each room has a separate warm air pipe, and without a doubt the owner will be very well satisfied with the operation of the system.

The job is located at Belleville, Illinois, and the heating contractor

who did the installation work is F. Hock & Sons, Belleville, Illinois. The warm air area totals 961 square inches, while the total cold air return area in square inches is 1,090, or 129 square inches more than the warm air, which provides adequate safety margin.

## Correct Furnace Firing Methods Require Study and Practice

*Each Type of Coal Used Also Needs Special Attention—Keep Grates Covered With Ash*

By L. W. MILLIS, Security Stove & Manufacturing Company

**C**ORRECT furnace firing methods probably bring to mind the proper firing of some particular fuel. It may be lignite, rotten soft coal, and on up to good soft coal; semi-anthracite, Arkansas anthracite or Pennsylvania anthracite, and all of them in various qualities and sizes. Or it may be natural or artificial gas, hard or soft wood, either green or dry, or perhaps oil of different qualities. Each of these presents its own peculiar problem, involving adaptability of the furnace itself for use of the particular fuel, also the problem of chimneys (or draft).

I am convinced that a very large percentage of users find it convenient and often necessary to use soft coal (raw soft coal). I have found that a person who has some knowledge of the properties of soft coal and has learned how to fire it to advantage only needs information concerning the properties of other fuels in order to fire them successfully.

### Advises Installers to Study Firing Methods

The furnace dealer or installer who has such knowledge to impart to his customers has a distinct advantage over the furnace man who expends no effort to make such knowledge a part of his equipment.

Soft coal is made up of a series of things that ignite at temperatures ranging from about 400 degrees to 1200 degrees. When a particle of

the 400 degree stuff ignites its temperature rises and ignites the next higher series. Step by step the higher temperatures are finally reached. The resulting fires attain temperatures of 1800 degrees or more. *The higher the temperature attained, the better the efficiency. However, it is not hard to imagine that when the high temperatures are reached the portions that ignite at low temperatures are burning, or rather trying to burn, at a furious rate.* The last two sentences are of great importance. Read them again.

If a high temperature fire is to be maintained, in order to obtain the largest amount of heat from the coal burned, it is manifest that in *mild weather the fire must be small in volume.* Any method of firing that accomplishes this should find favor.

### Defining Coal Content

Until recently, directions for firing furnaces advised rounding the fuel up in the center and above the level of the bottom of the feed door. This holds good only when the furnace is being fired somewhere near its full capacity. The number of hours during a winter in which a big fire is needed varies in different latitudes and altitudes, but in all locations the majority of hours require a smaller fire.

Coal of various classes and qualities differs in the kind of combustible it contains, ranging from 30 to 50 per cent of carbon in the form

designated as "fixed" carbon. This portion ignites only at high temperatures and the resulting smoke is not highly colored. This portion of the combustible is practically the same in character, regardless of other properties, in all coal. In Pennsylvania hard coal it runs as high as 88 per cent of the combustible. It ignites at about 1000 degrees. The balance of the combustible in the coal is also largely carbon, but it ignites at comparatively low temperatures. It is also mixed with still other combustibles. It ranges from 20 to 45 per cent of the total combustible in the fuel. This portion of the coal ignites at temperatures ranging from about 400 to 700 degrees. It is this portion of the coal that is often referred to as the gas making portion, or the smoke producing part, and



Sketch No. 1



often times as the "Volatile" contents. It is all of them.

If you can show your customers how to handle their fires when burning coal of this quality you will win their friendship and at the same time enlarge your sphere of usefulness. For many years I have been showing people a method of stoking sidewise in the fire pot.

#### Results of Stoking the Furnace Sidewise

The ashes on the grates protect them from destruction. The portion marked "hot coal" has lost most of its smoke making quality and is composed of the left over portion that ignites at about 1000 degrees. The fresh coal, of course, contains the smoke-making, gas-making, fast-burning, 400 to 700 degree volatile matter, as well as the 1000 degree portion.

The heat from the hot coals will gasify the low temperature stuff in the fresh coal and the high temperature flames from the hot coals will set the liberated gases on fire. Care must always be taken (no matter how you fire) to be certain that there is at least a small flame present to keep the gases ignited or explosions are liable to occur.

Have you ever been abused because you sold a man a furnace that would explode? I have. If a cap of fine coal is put on top of the fresh coal, the gases will find an easy outlet through the fresh coal sideways toward the hot coal. Coal fired in this manner burns slower, hotter, more efficiently, and with but little black smoke. No air should be admitted over the fire or through any device other than through the grate. A little air admitted through the feed door grid *might* reduce the color of the smoke while the largest portion of the smoke making portion is being gasified, but just as soon as the bulk of the volatile matter has been driven off air admitted over the fire becomes "excess air." It cools the surface already heated and, in addition, absorbs heat from the burning gases on its way to the chimney. Excess air is the principle enemy of efficient combustion. "*Fight shy of it.*"

You have probably seen sketches or heard of methods similar to the one I have described. They are all better than "chucking" or even piling fresh coal all over the old fire. The advantage in my method is that it is easier to push the hot coals to one side in the average furnace than it is to push them back, in order to make a pocket to put the fresh coal in. If you can shake the grates separately or in pairs, it is easy to make most of the pocket by shaking the ashes down on one side only. It is not possible to do this when the pocket is made in front. There is some liability of lifting up and mixing ashes with the hot coal when pushing the coal either back or sidewise. Such ashes are liable to melt in the hot coal and form a clinker. For that reason I prefer to shake the fire down on one side, thus forming the pocket.

#### Small Hot Fire Most Economical

Remember, a small hot fire will be more economical than a larger fire burning at a lower temperature. It will make less soot and be easier to take care of. This method can be used on all "smoky" coal and on semi-anthracite. So far as smoke or soot is concerned there is not so much advantage in using it for anthracite, Arkansas anthracite or coke, but within the limit of staying lighted it is economical because of the smaller, though hotter fire.

You understand, of course, that this method has no advantage in weather that requires somewhere near the full capacity of the fire pot. In localities having about 5100 hours requiring heat there are rarely over 1000 hours requiring near the full load.

I want to call attention to certain kinds of Arkansas anthracite and also to some so-called semi-anthracites that disintegrate while burning. Such coals often dribble through the grate, sometimes in a burning condition. The ashes of such coal appear to be very heavy, because they contain a large percentage of unburned, powdered, coal. They often continue to burn in the ash pit, causing damage to the grates. This kind of coal rarely makes

clinkers. It is, therefore, necessary to allow it to burn without touching it or without shaking it. The side fire method will help in such cases. If by any chance enough ashes lodge on top of the grates to prevent such disintegrated or powdered coal from dribbling through the grates, it often packs so tight that air cannot get through the grates to keep up combustion.

#### Amount of Ash Runs from 4 to 20 Per Cent

If fired sideways, the air has a better chance to get through the thin portion of the fire. The powdered coal will then burn from the top or side surface. Such coal has little volatile matter and the smoke has very little color. Often the user of such coal will insist that the grates are too open. As the coal breaks down to pieces the size of a pencil point it is manifest that the trouble is not in the grates. It is no uncommon thing for grates to be destroyed by such coal in a few hours. There are many coals designated by users and by furnace men (not by coal dealers) as clinkering coals.

Clinkers are ashes that have melted and run together, sometimes by chemical action, sometimes just lightly welded together. All coals have ashes. They vary in amount from four to twenty per cent of the total weight of the coal. They are composed of about eight different constituents, and the fusing temperature ranges from 400 to 2300 degrees. A coal that contains large amounts of ash which fuse at low temperatures (1,200 degrees and under) will "clinker" easily.

#### Broken or Warped Grates Caused by Careless Firing

If coal is allowed to burn *without disturbance and the ashes allowed to settle downward naturally, there will be little chance for clinker to form.* If the ashes are stirred and lifted up into the burning coal, clinkers are almost certain to form. If it is necessary to get more air through the coal, shake a few of the ashes through the grates, don't stir the fire unless a clinker (made by previous bad firing) has formed over the grate.

In addition to clinkers there is

one other troublesome thing caused by ignorant or careless firing; that is grates broken or warped, or even melted. No matter whether the furnace itself is made of steel and fire bricks or of cast iron, the grates are always made of cast iron. The iron had to be melted in order to give them proper shape. Very common fire temperatures will soften and weaken iron and the ordinary fire of a cold winter day can, under proper (or perhaps I should say improper) conditions, melt iron.

Most people think grates can only be destroyed by allowing ashes to pile up under them. *That is not true.* Many grates are destroyed in that manner, but there are more grates destroyed during the first hour of firing, when ashes have had no chance to accumulate, than any other single hour in the life of a furnace.

Many people have laughed uproariously at me for advising that ashes be put on top of grates before a fire is made in order that the grates may be protected from the direct action of the fire. Many dealers and others have told people to keep the ashes from under the grates, and assure them, without reservation, that the grates would last a lifetime. If a fire of 1,800 degrees is directly on top of the

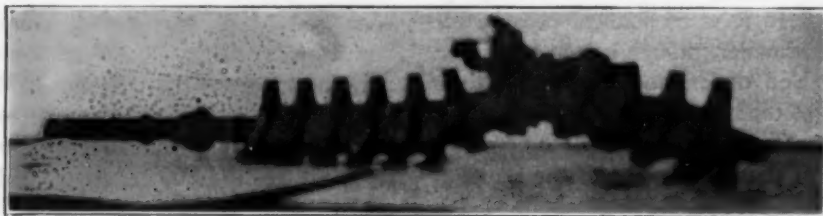


Figure No. 2

grates, they become excessively hot, plastic and weak. Baker's dough may bring to your mind the condition of the iron. The weight of coal, coupled with that of the grates themselves will cause them to sag downward. If at the same time there are ashes up close to the grates, the inner portion of the grate may melt and run down under the grate, on top of the ashes and be found welded to the bottom of the grate.

Figure two is made from a photo.

The main bar is hollow. The iron that flowed from it welded to the under side.

The right hand bars in figure three are the sawed off portions of two adjoining bars welded together.

Nearly all of my specimens show that while ashes were under the grate the fire was directly on top of the grate. Ashes under grates tend to destroy them, but fire directly on top of the grates is much more



Figure No. 3

certain to destroy them. Ashes on top of grates protect them.

I know of no manufacturer of furnaces who makes an iron so "rotten" that it will not answer for a grate if protected from the direct action of fire and the ashes kept from under the grate. There is no manufacturer who can make so "good" a grate that it will not melt if in a hot enough place. The user

### Furnace Installers Do Believe in Work of National Association

Of great interest to the warm air heating industry in general is the attitude of the warm air furnace installers toward the work which the National Warm Air Heating and Ventilating Association is doing for the uplift of the industry.

In an effort to find out just what that attitude is, AMERICAN ARTI-

SAN sent out a questionnaire to representative warm air furnace dealers. One of the questions asked was, "Do you believe in the slogan of the National Warm Air Heating and Ventilating Association? Do you think the word 'average' should be stricken out?"

Of the total percentage of those who answered the questions, there were 80 per cent answered the first part of the question in the affirmative. Seventy per cent of those answering said the word "average" should be stricken out.

### Oil Burners Are Not Taking Rapidly With Furnace Installers

Either the oil burner is not taking well with the warm air furnace installer or that business has got out of his hands almost entirely.

To the question, "Do you install oil burners?" 73 per cent of the installers who answered said they did not install them, while the remaining 27 per cent said they do.

There is some growth, however, in the number that are putting in oil burners, but it is slow. In 1924 this same question was asked. There were at that time 95 per cent who answered in the negative.

# The Relation Between Warm Air Furnace Heating and the House

## Answering Question "Why Am I Interested in Warm Air Heating?"

By J. D. HOFFMAN, Department Mechanical Engineering, Purdue University

**P**ROMISES on futures are easily made, but difficult to keep. When your September 28th request came, why did I chalk up the calendar for December 1st, instead of buckling down to the job at once? Well, I did as many other people do, postponed it to a more convenient time, and now I am reminded of the fact that there is no time more convenient than the present.

Making good on our promises is the one big lesson for all of us to learn and one of us, at least, is not an apt scholar. Cultivating the *at-onceness principle* as one article in our individual business code is one of the most desirable and yet one of the most difficult things to do, but I believe it can be done. Incorporated in our lives it becomes the heat-treatment which develops and refines mental and moral fibre and goes far toward keeping this old world of ours as it is—a fine place to live in.

### Why People Became Suspicious of Furnace Heat

I have just returned from the mid-year meeting of the National Warm Air Heating and Ventilating Association. I am impressed with the fact that here is a group of men engaged in repairing the fences of public confidence that were allowed to go into decay by a lot of men before them who did not make good. Some furnace manufacturers sold furnaces that did not measure up to the desired standard. Some men who know nothing about furnace heating bought these furnaces and tried to install them in houses so that people might be comfortable.

Many of these houses were little better than tents and were built by contractors who skinned the job. The skinning was probably done because the owner squeezed the dol-

lars so hard the eagle finally decided to let the job to the cheapest labor he could find. Or possibly the owner, knowing he was building the house to sell or rent, did the skinning with malice aforethought. Anyway, there was lack of integrity at many points. As a result the people had justly become suspicious of the words *furnace heat* and the burden of proof always lodged against the one man—the fellow who made the furnace.

### Impossible to Fool All People All of Time

Am I overstating the case? Judg-



Prof. J. D. Hoffman

ing by the amount of time I put in these winter days looking over such misfits and making suggestions to partially correct the unfortunate conditions, I am convinced the case is, if anything, understated. A lot of men these days are engaged in the short sighted policy of considering the personal pronouns—I, my or mine and me, and the devil take the tail ender. They forget that it is impossible to fool all the people all the time. Sooner or later (it ought to be sooner) they get

their just deserts, but in the meantime a grist of honest well-meaning people get a lot of second rate junk they were not looking for.

It is no secret that in certain localities basement (or cellar) air is circulated to the rooms. This is not done through ignorance. Everybody who stops to reason at all knows that this is one of the worst conditions possible, but many buyers will not take the trouble to analyze all these points. Such installers are on a par with the man who walks into the room of a new house and says, "Let's see, this a —x— corner room with three windows. This will require a warm air pipe of — diameter and —x— stack." He never takes his pencil out of his pocket and probably would not know how to use it if he did. His entire design will be completed in about thirty minutes. Such a man is equal to the house contractor who covers the studs with building paper and puts on the lapping, omitting the sheathing entirely. It looks all right and *may work*, and the contractor pockets the saving. I could say a lot more on this subject, but think I had better not.

### Public's Rights Must Be Protected

I started out to commend the society above mentioned for its present far-sighted policy and its businesslike activity in carrying out that policy. These men believe the public has rights that should be protected. They also know that there are many things still to be learned about furnaces and furnace installation and they are going to the root of the matter to obtain that information. To play fair with their patrons they are spending good dollars in obtaining authoritative data and these data are being broadcast



to every person who cares to listen. Later on, if there is a misfit, they will be able at once to tell who is to blame. Is this policy worth while? Most assuredly, yes. Public confidence is even now being vitally touched and the story is only partially told.

#### Asks and Answers Why His Interest in Warm Air Heating

A furnace heating system is not a fool-proof aggregation of iron and steel that anybody can throw into a house with assured success, and a house consists of more than four walls and a roof. The combination, therefore, calls for real sci-

tific treatment of the problem.

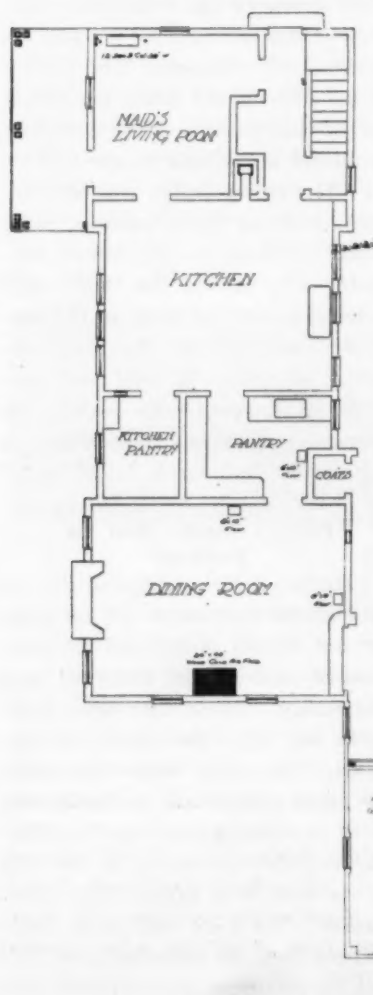
A friend of mine is interested in knowing why heating and ventilating engineers should be so concerned in furnace heating. Well, why should I be interested in furnace heating? I get nothing out of this write-up—I am not manufacturing or selling any of the materials which go into a furnace plant—in fact I wonder at times why I am concerned in it at all. However, here are some of the facts. Probably above seventy-five per cent of the residences of the country are of frame construction. The frame house may be the warmest or

the coldest type of house in winter, depending upon whether it is well or poorly made. Probably seventy-five per cent of these houses are heated by warm air furnaces and a fair estimate would condemn seventy-five per cent of these systems as defective. From the standpoint of the suffering public, why shouldn't I be interested.

Now with this out of my system let me congratulate the society upon its work and all others who are interested in this great subject and assure them that their efforts will finally restore furnace heating to the position it deserves.

## Large Residence Heating Job Taxes Ingenuity of Warm Air Furnace Installer

*Owner Gives Specifications for Location of Registers Which Had to Be Strictly Adhered to Throughout*



THE proper installation of a warm air heating system is a science whose application requires precision and minute attention to detail. This is especially true in large, rambling houses, where long runs are almost sure to be encountered, and where the home owner is inclined to be the least bit finicky about the location of the registers and cold air return faces.

But the warm air furnace installer—who knows his business and

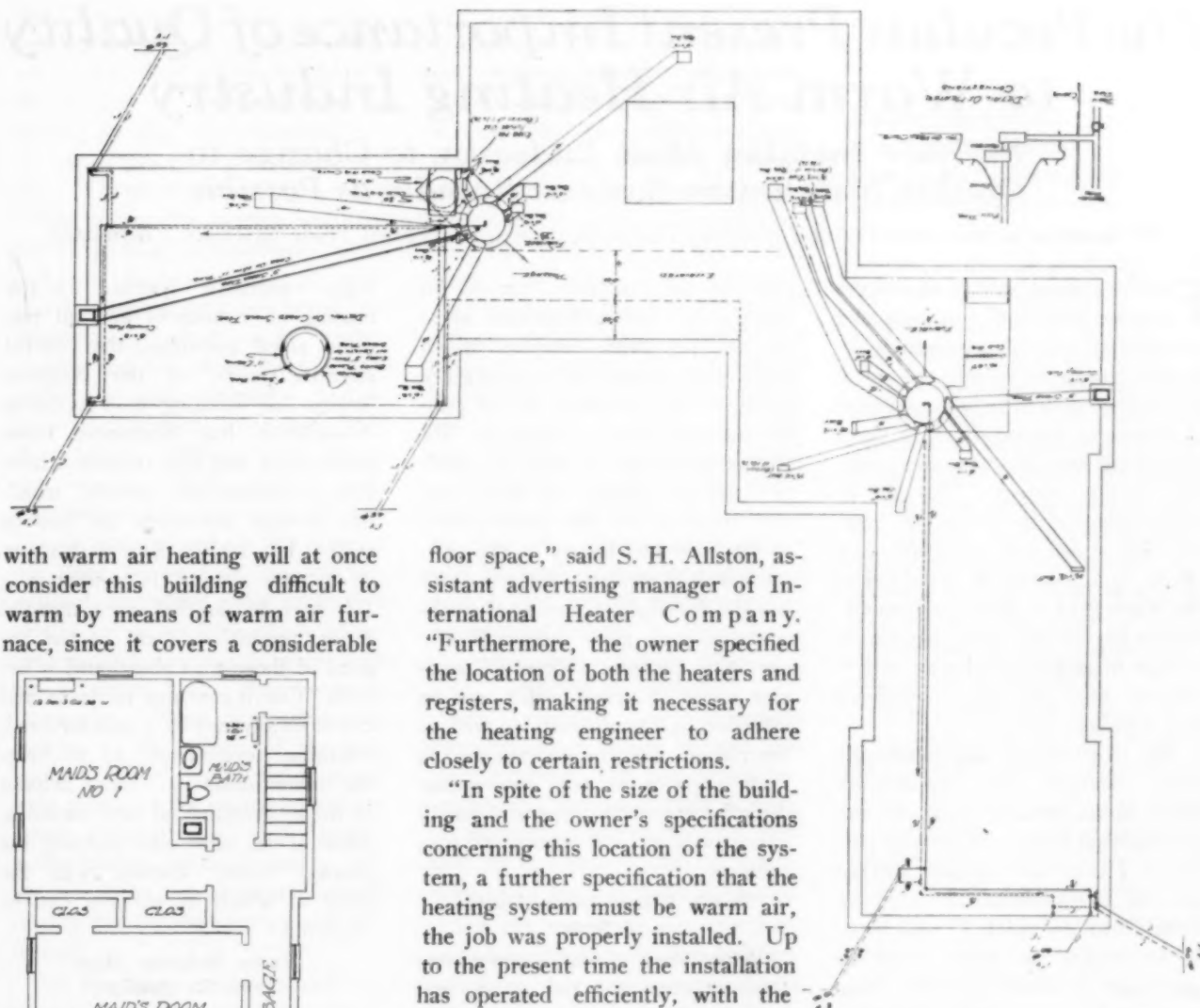
has a good store of patience need have no fear of exacting home owners. He has a system of heating that is fundamentally sound and his only care need be to follow the Code, together with a good measure of common-sense seasoning.

In substantiating these statements we show how one furnace installer successfully met the somewhat exacting home owner's requirements.

The floor plans shown herewith are those of the B. M. Crouse residence at Guilford, Connecticut, which is a very large residence.

"It is believed that men familiar

First Floor Plan of B. M. Crouse Residence, Guilford, Connecticut



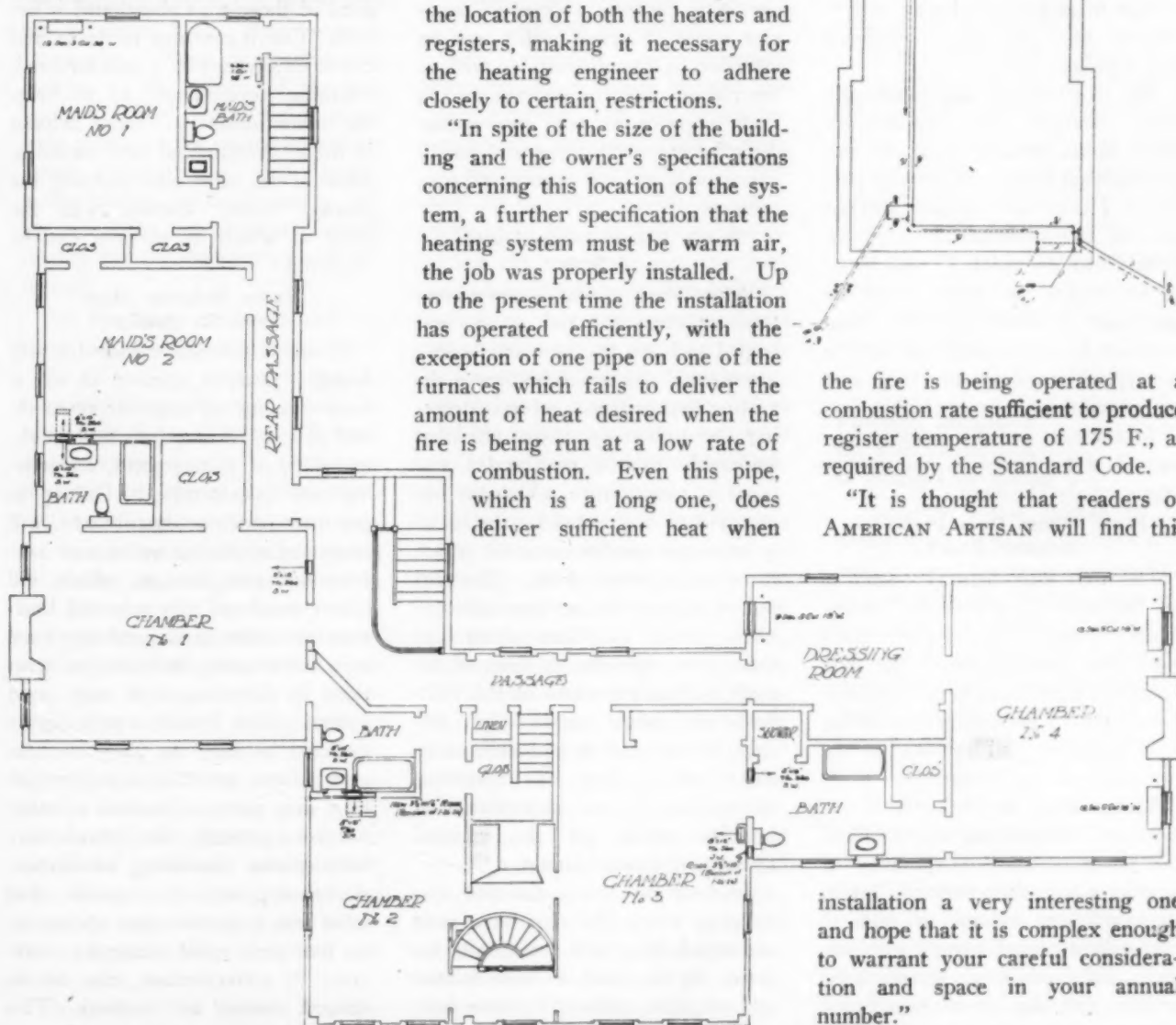
with warm air heating will at once consider this building difficult to warm by means of warm air furnace, since it covers a considerable

floor space," said S. H. Allston, assistant advertising manager of International Heater Company. "Furthermore, the owner specified the location of both the heaters and registers, making it necessary for the heating engineer to adhere closely to certain restrictions.

"In spite of the size of the building and the owner's specifications concerning this location of the system, a further specification that the heating system must be warm air, the job was properly installed. Up to the present time the installation has operated efficiently, with the exception of one pipe on one of the furnaces which fails to deliver the amount of heat desired when the fire is being run at a low rate of combustion. Even this pipe, which is a long one, does deliver sufficient heat when

the fire is being operated at a combustion rate sufficient to produce register temperature of 175 F., as required by the Standard Code.

"It is thought that readers of AMERICAN ARTISAN will find this



installation a very interesting one and hope that it is complex enough to warrant your careful consideration and space in your annual number."

Above, Basement Layout of Crouse Residence. Below, Second Floor Register Location

# *The Peculiar Present Importance of Quality to Warm Air Heating Industry*

## *Furnace Installer Must Endeavor to Change to Quality Installation Basis as Rapidly as Possible*

By GEORGE L. BENNETT, Director Building Trades Extension, Sheet Steel Trade Extension Committee

**F**ROM a great variety of sources comes the well authenticated report that to a degree which increases month by month, the warm air heating system is being adopted by houses of a type which in years past would have given no consideration to this system. This, as an achievement of the warm air heating and ventilating industry as a whole, is a source of satisfaction. But there is in it cause for congratulation beyond the mere increase in volume of sales, and also an obligation to merit the new confidence thus reposed.

The situation is, that practically every comfort and convenience which in its present improved and standardized form, the average person or family now accepts without especial thankfulness as part of "what-is-to-be-expected" was in its earlier forms the luxury or the plaything of richer people. Most comforts have thus descended to the average citizen from the rich, who can afford the extremely high prices of first output and the quick changing of styles usual in the earlier stages of development.

### **From Whom Does Profit to Industry Flow?**

The rich thus naturally tend to set the style in practically everything. Their's the power which dares the untried; their's the first judgment as to sufficiency of attainment; their's the ability to bring first incentive and reward to the promoter of new things.

The profit to any industry is not, however, in satisfying the rich, and the diversity and individuality of product which they demand, but in the continuing volume of sales to the well-informed many, who can and will accept a standardized article for its own superlative service and convenience. The suc-

cess of any industry consists in courageous, forward-looking service to the public—service which keeps well abreast and even slightly ahead of the demands of the public—service which organizes for the development of both its product, its own ability to serve and the training of the public mind to the value and beauty of the service which it renders—service which has the foresight to use good workmanship and good materials efficiently to produce articles of superior merit at prices which can be afforded by the poorest, as well as the richest, and the courage to ask such a profit as will recompense them fairly for this effort and intelligence, and as will insure its continuance.

### **People Follow Distinctiveness of Style**

When such a development has taken place, the rich who first helped to bring the new article into commercial existence, become a diverting and distracting force, drawing the public by their admitted leadership toward new styles and types of expenditure, which are not required or warranted by the social or economic conditions under which the average person lives. The rich do not consciously set themselves to cause people to follow them into these new expenditures. Instead the fault is, that too many of the well-to-do and poorer people follow distinctiveness of style and differences about which they can converse, rather than the solid comforts and benefits which are the rational sources of human action.

In some rare cases, the new systems to which the rich have been converted, have been found to be inferior in the comfort, convenience and elegance realized, to those later attained by some older and seem-

ingly outgrown system. In the heating of residences and all medium sized buildings, the careful scientific work of the National Warm Air Heating & Ventilating Association has discovered those possibilities and that reliably attainable excellence of service which has brought the warm air heating system into higher place than many of its new rivals. It is now in a fair way to do that very unusual thing, reestablish itself in the regard of those who abandoned it before. Can it continue to do so and can it so advance by a standardized, scientific development as to keep the adventurous rich from helping in the exploitation of new methods, while at the same time keeping the average family content with the price at which its services can be rendered?

### **Entire Industry Must Practice Quality**

It can if the whole industry will actually practice quality in all it does—quality of scientific research, and design, of materials and workmanship, of management, advertising and salesmanship. Failure in any one of these particulars will cause the springing up of new systems and new devices, which will divert much of this splendid business into other hands, and may even ruin the heating business, as practiced in America, to a very great extent. The British are a highly civilized people, but they live in cold rooms and the money which they thus save, is devoted to other purposes entirely; the French save heating by avoiding ventilation. Americans are so versatile that what new economies may spring up, so that new great pleasures, comforts or conveniences can be indulged, cannot be foretold. This much, however, history tells us:



That the industry which so cheapens its product in making its bid for favor, that it delivers only a flimsy and unreliable service, is writing its own death warrant.

#### **Must Use Care in Materials Used in Basements**

The warm air heating industry has in the past years achieved splendidly in basic design. It must march onward to those better attainments of which it is readily capable and for which there is now both room and demand. And it must use materials of such reliable strength and stiffness as to insure the respect which comes from staunchness and continuing service. Flimsy materials which would never be used in outdoor construction without immediate paint protection should not be used in cellars, where the conditions are often worse than out of doors from the corrosion standpoint. Paint is inadmissible because of the effects of the heat upon it. But heavy sheet metal well protected by an anti-corrosive metal coating will, with proper workmanship, make a quality job, for which the average customer will readily pay the necessary small difference.

No two facts in merchandizing stand out more clearly than these:

1st. That any customer can, by competition among the sellers, be easily put into a frame of mind where all his energy is bent upon securing the lowest possible price.

2nd. That the same customer can by quality and the salesmanship of quality be brought somehow to find the money to buy quality when he is given a fair chance to do so.

The price reductions, which come not from the application of industry, ability and good management to the lowering of costs of all sorts, but which arise from cutting down quality of workmanship and materials to the point where good service cannot be given and honest effort loses its reward, can and does bring about the debasement of any industry to levels which are lower and lower each year.

Everywhere the eyes of business men are turned toward the future

and toward new articles of manufacture and commerce which have not yet been debased to those levels where only sharp dealing produces a profit with the generality of customers. This is, however, only an effort to outrun the trampling herd and to snatch a mouthful or two before the fair green pastures are turned into ruin. When an industry runs amuck this way, all the reliables fail one after another and only the tricksters are left. Since neither the United States of America nor any of its people is, in the long run, benefited by the successive ruining of all of its well intentioned and helpful citizens, it should be clear that unrestricted competition pursued in this way is not a healthy sign, but on the contrary, a devastating disease.

#### **Let Buyer Beware Still Attitude in Business**

Our common law recognizes broadly and generally the old Roman maxim, "Let the buyer beware," and interposes only in cases of carefully prepared fraud to protect the purchaser from the consequences of his own poor judgment.

We are not here and now concerned with the buyer. The industry is not his nor are even the faults which debase it his. Let every seller in the industry beware never to step off the magic quality carpet, and he and his industry will be taken by it to that prosperity which they sufficiently wish.

First, creep if you must, then walk as soon as you can—sell at least one job on quality each month at the start and turn all your selling arguments into quality rather than price as rapidly as you can.

The man who has thought of himself as a mechanic, and who has known that he had no great ability as a salesman, where price was the only consideration, now discovers to his amazement, that where quality is concerned, he has a real message to carry to his customers and a real bond of sympathy and interest between them and him, which enables him to become a salesman of force.

This then is the "Peculiar Pres-

ent Importance of Quality to the Warm Air Heating Industry."

#### **Illinois Sheet Metal Men Hold Successful District Meeting at Alton**

Closer acquaintanceship between sheet metal contractors in Illinois is assured if the future district meetings are as successful as the one held in Alton, Illinois, December 16, at the Mineral Springs Hotel.

W. C. Markle, secretary of the National Association of Sheet Metal Contractors, was present and made the principle address of the evening.

The event of the evening was a get-together dinner and James J. Barrett acted as toastmaster. promote a closer acquaintanceship between the sheet metal contractors of that section of the state and to solidify the organization.

Others who spoke were G. J. George and F. J. Graeff of Springfield, president and secretary respectively of the state association. The object of the evening was to promote a closer acquaintanceship between the sheet metal contractors of that section of the state and to solidify the organization.

There are nine Alton contractors affiliated with the state association and James J. Barrett of that city is state treasurer.

#### **Furnace Installers Do Not Favor House to House Canvassing**

House to house canvassing evidently goes against the grain of most warm air furnace installers, because 65.5 per cent of those who answered the question, "Do you canvass from house to house for your business?" recently asked by AMERICAN ARTISAN, replied that they do not canvass from house to house.

Of the 34.5 per cent minority who do employ house to house canvassing, most of these are rated as class "A" men.

Are the furnace installers overlooking a bet here, especially when the largest direct installer in the country bases its growth mainly on this method of doing business?



Warren Carter

## Some Ways of Obtaining More and Better Sheet Metal Contracts

*Use Sheet Metal Yourself—That Is One Good Way To Build Confidence In It*

By WARREN CARTER, Carter, Donlevy & Company

**T**HE sheet metal business seems to be the only trade left to the mechanic, as in this a man still has a chance to buy in the raw and cut, fashion and convert—then assemble. In practically all other trades goods are supplied ready for installing.

### Sheet Metal a Business of a Great Past but a Greater Future

Sheet metal has so many possibilities and ramifications that you cannot get stale on it. It is a great business—with a great past, but capable of greater development in the future.

Vision and enthusiasm are very necessary at this time. They must be injected into the work if this profession of sheet metal working is going to develop and prosper.

There are no roast quail flying around, even though we may feel that the Sheet Steel people are going to make our markets. No, we must go after them strong and hard, and these timely suggestions may assist us in developing our possibilities.

1. Are we advertising our profession of sheet metal by using the materials we handle and applying on our own properties and those of our relatives?

2. How are we going to talk sheet metal work if we do not show our own belief in it by using it ourselves? One good example is worth 100 lectures.

3. Tin roofing in particular must be sold. The public is ready for it, but not asking for it, except in a few instances. A tin roof is good looking—no mistake about that—especially when the red paint makes a nice contrast with a stone or stucco background.

4. I am a great and ardent believer in tin roofing. When I moved into the suburbs of Philadelphia some years ago, I purchased an old stone farmhouse, which allowed me the opportunity of enclosing the porches and building a wing so that I could place tin roofs on these surfaces. This action has not only enhanced the value of the property, but also added a touch of beauty.

5. Photographs of sheet metal installations, tin roofs, etc., do not cost a lot, but give a great chance to show what is being done and refute adverse arguments. Do you realize that every tin roof you apply is building for the future and anchoring the community more firmly to sheet metal work?

6. Warm air furnaces can be talked up more. There are many types of buildings for which the warm air heater is not adapted. On the other hand, there are hundreds of chances right around us going to waste. Of course you know the warm air furnace is a great consumer of sheet metals. Furnace drums, casings, bonnets, elbows, smoke pipe, bright tin pipes, etc., all require mechanical skill in their installation and use vast quantities of sheet iron and tin plate. This furnace proposition offers a great field for new work and also renewal of its many sheet metal parts as the years go on.

### Must Talk Warm Air Furnace More

To my sheet metal working friends, no matter where you are located, I say this: You have got to push this business to develop it, but I know it can be done, if you will think, feel, believe in and talk more metal work.

The copper and brass and the sheet steel trade extension people are doing great work, but it is all preliminary to what the sheet metal contractor himself has to do. Individual salesmanship on the part of each man in his own community is what will finally tell.

# Warm Air Furnace With Forty Registers Heats 4-Apartment Building Without Difficulty

*Outside Return Air Was Used Because of the Difficulty of Recirculating Air from So Many Rooms*

**W**HAT are the limits, if any, beyond which a warm air heating system cannot serve? These limits are certainly not reached in the ordinary moderate-sized apartment building.

## Limit Not Reached in 4-Family Apartment

This is proved by the fact that about a year ago C. A. McDade & Son, sheet metal contractors of Selma and Montgomery, Alabama, installed a warm air heating system in a 4-family apartment building. It has two apartments on each of its two floors. Each apartment con-

tains a living room, sun room, dining room, breakfast room, kitchen, bath and three bed rooms and as there was also a register in the hall, there were ten registers for each apartment or forty registers from this one furnace, a Front Rank unit heater.

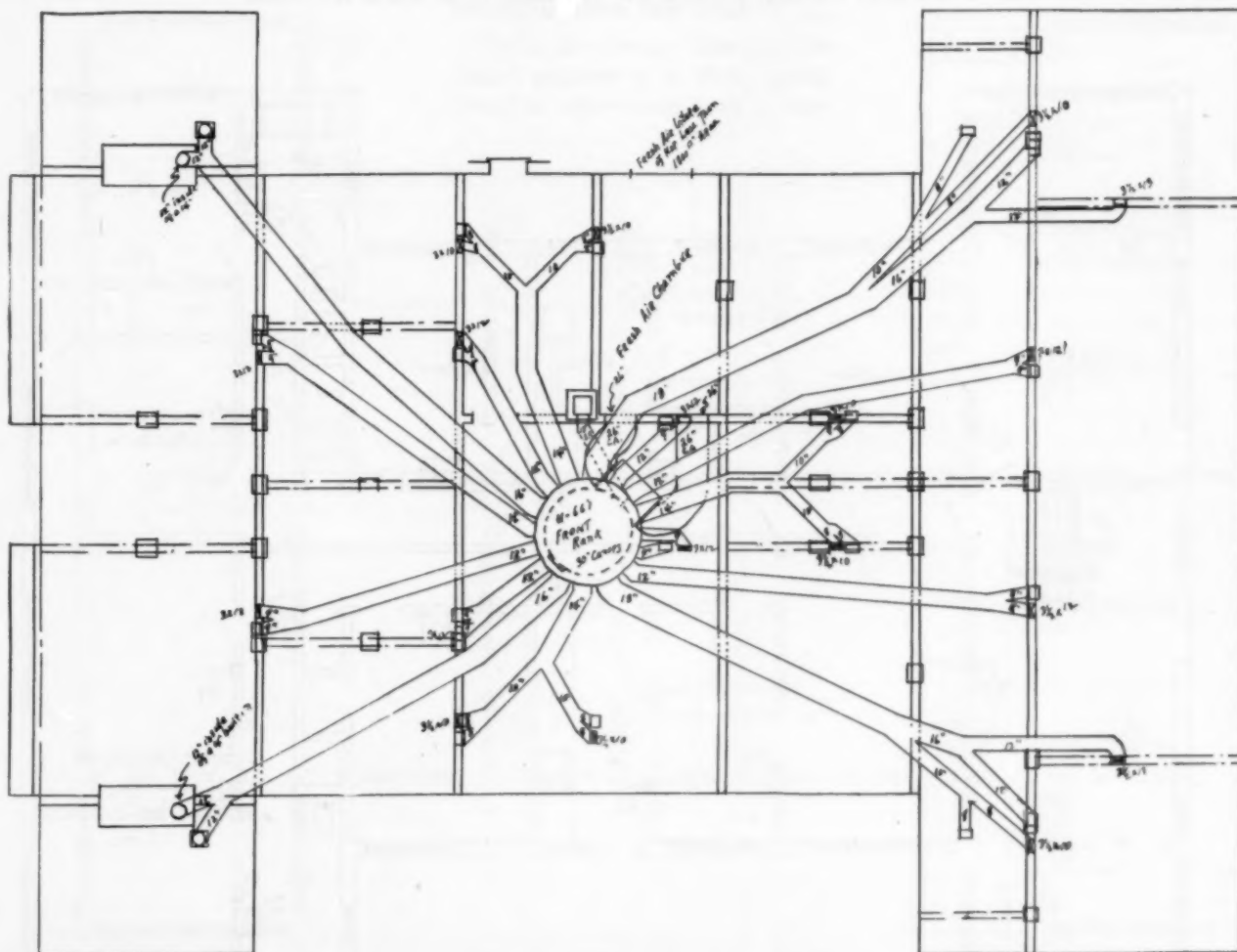
"No particular difficulty was experienced in laying out the job and the Standard Code was followed, with proper allowances for the comparatively warm climate," said John J. Walsh, secretary of the Langenberg Manufacturing Company. "The pipes were figured on

the basis of 70 degrees at 15 above zero instead of 70 at zero, as the Code specifies.

"Due to the warm climate and also to the difficulty of securing recirculated air from so many apartments to the same furnace, outside air alone was used.

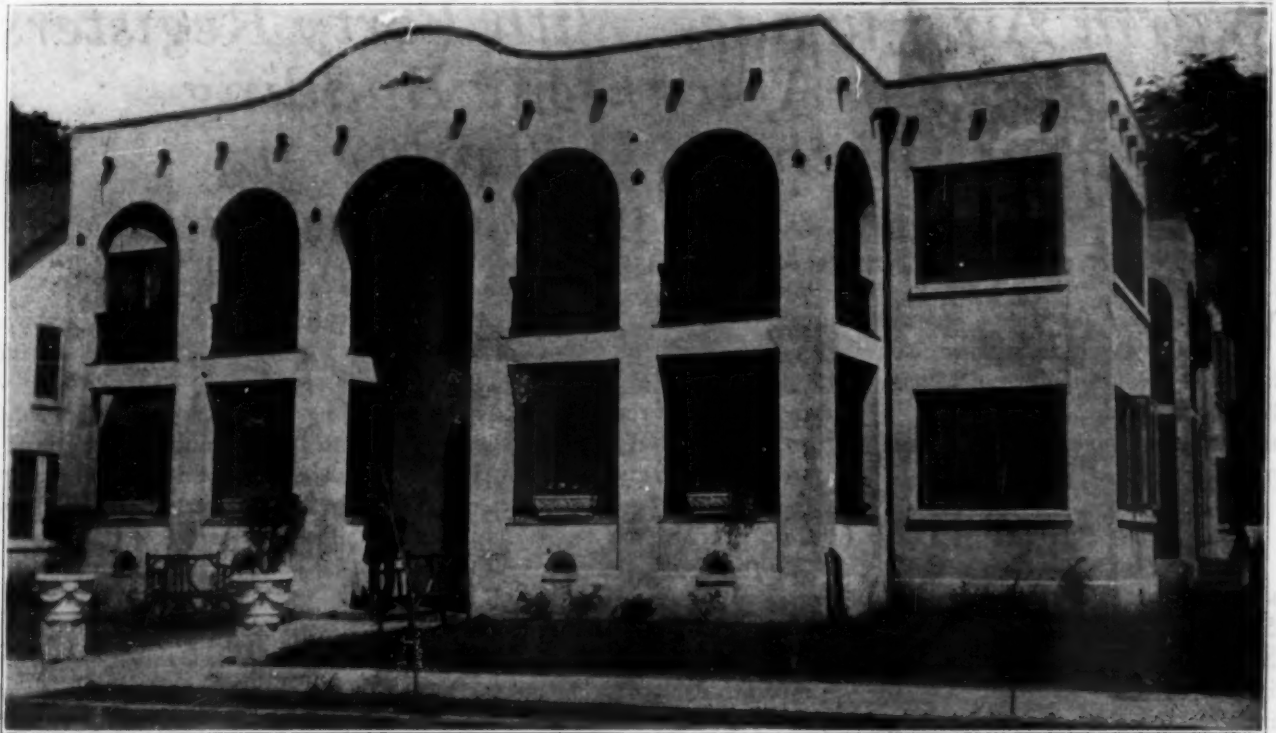
## Some Damper Setting Found Necessary

"It would have been impossible to take forty separate pipes from one canopy and since this was not necessary, you will see from the plan that 'Y's' were very freely used, being controlled by manual

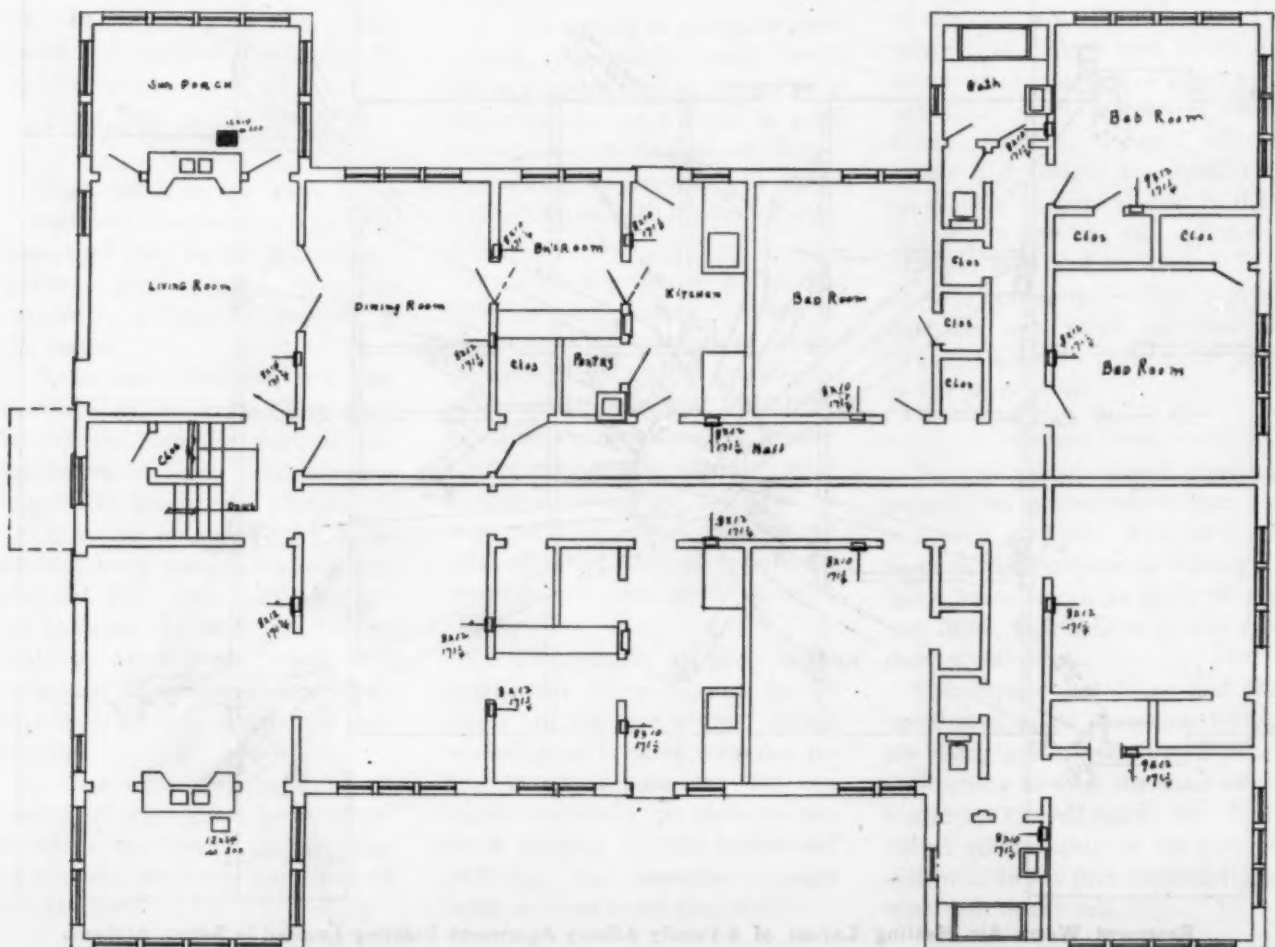


Basement Warm Air Heating Layout of 4-Family 2-Story Apartment Building Located in Selma, Alabama





Exterior View of An Apartment Building in Selma, Alabama which is heated with Warm Air. Below, One of the Floor Plans of the Same Building, Showing Size and Location of Warm Air Ducts



dampers. This was made possible owing to the fact that this is a forced air system and not a gravity system.

"Owing to the difference in exposure in some of the apartments from the other, it was necessary for the heating contractor to do some damper setting after the job was installed and tried out. Considering the amount of floor space in this building and the length of most of the runs, we consider it remarkable that no more damper setting was needed.

"This entire job was installed complete by C. A. McDade & Son, sheet metal contractors of Selma and Montgomery, Alabama. Our installation foreman looked over the job after it had been completed and pronounced the work of the McDade firm as very excellent, and strictly in accordance with our plans.

"The plant, of course, has been

in operation only one winter, as it was installed last fall, but there is every evidence that it will be a complete success."

#### Combination Furnace and Sheet Metal Shops Apparently Possible

If one has doubt about the possibility or feasibility of successfully operating a combination warm air furnace and sheet metal shop, those doubts fade rapidly into thin air after learning the opinions of class "A" installers and sheet metal men.

AMERICAN ARTISAN 33rd Warm Air Furnace Annual Questionnaire showed that 88.61 per cent of those dealers who returned the questionnaire are successfully operating combination shops. The dissenting minority was only 11.54 per cent. No argument there at all.

#### Furnace Installers Concede Replacement Work Is More Profitable Than New Work

Warm air furnace installers are almost unanimous in their conviction that replacement work is more

remunerative than new installations.

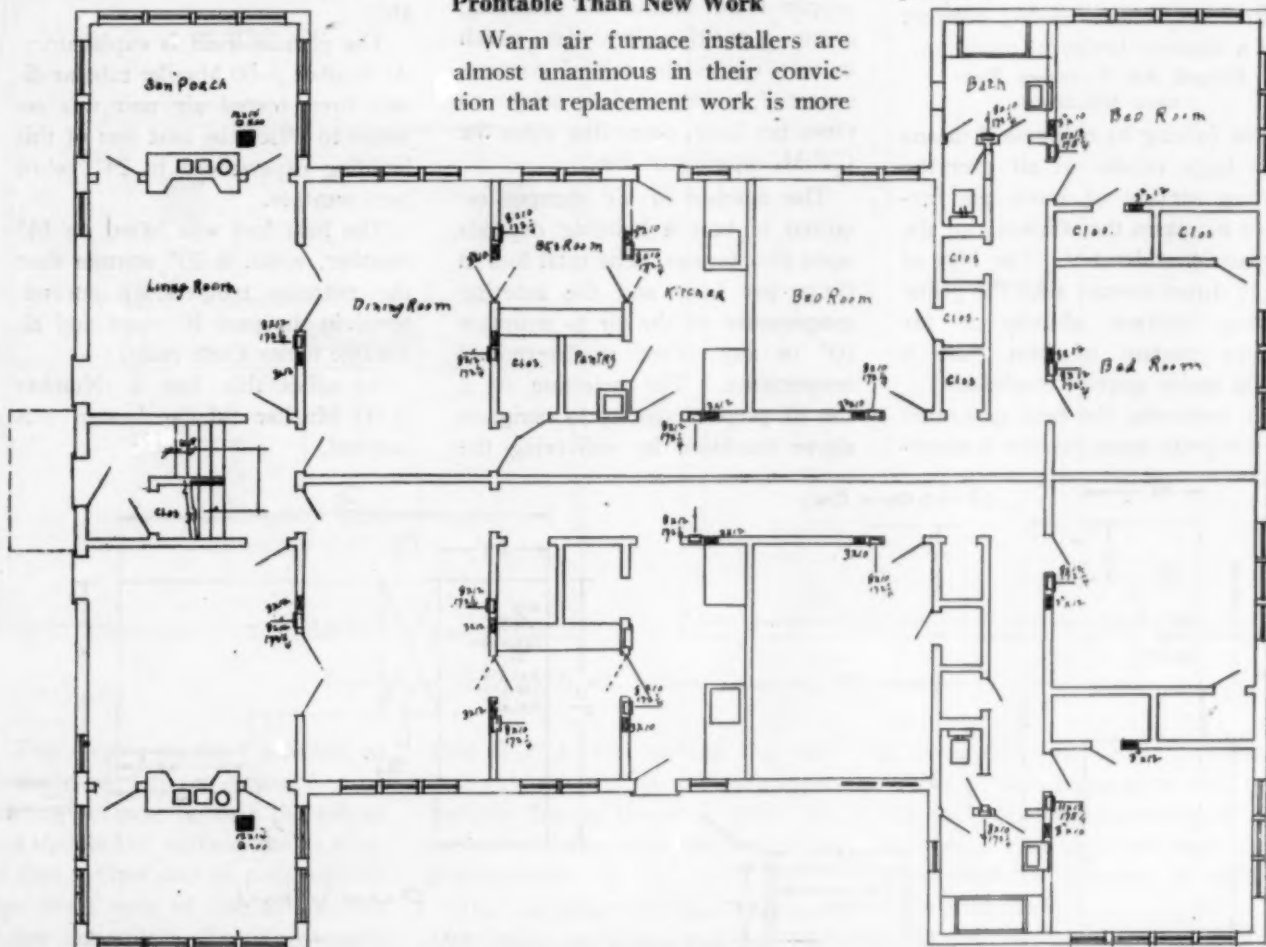
This was shown by AMERICAN ARTISAN questionnaire, which asked, "Do you find replacement business more profitable than new installations?"

The answers were divided as follows: The yeas were 69 per cent; the nays, only 31 per cent.

#### Twenty-five Per Cent Takes First Place as Figure for Fair Profit

Warm air furnace installers who favor 25 per cent as a fair profit are in the majority.

In answer to AMERICAN ARTISAN warm air furnace annual questionnaire which asked, "What do you consider a fair profit?" 31.5 per cent stated 25; 23.5 per cent, 20; 12 per cent, 10; 7.5 per cent, 40; 3.5 per cent respectively said 35, 33½, 30, and 12. There were 12 per cent who did not wish to answer the question.



Another Floor Plan of the Selma, Alabama, 4-Family, 2-Story Apartment Building in which a Warm Air Heating System Was Installed by C. A. McDade & Son, Selma and Montgomery, Alabama

# Reviewing Possibilities in Forced Warm Air Heating

## Dealer Must Have Ability to Grasp Vast Possibilities in Forced Air Heating Methods

By HENRY HOTTON, JR., L. J. Mueller Furnace Co.

**T**O THE dealer who has the ability to grasp the possibilities of fan furnace heat comes the harvest of innumerable opportunities to heat structures which formerly were considered only as steam or hot water possibilities.

Heating by warm air properly humidified is by far the most healthful method. Simplicity in operation and the economical aspect are points for a dealer to submit to his ultimate consumer.

The addition of a fan creates a positive circulation, makes the system dependable, and by keeping the air in contact with the occupants of a structure, creates bodily comfort and a superior healthful condition.

### Forced Air Increases Furnace Efficiency

The forcing by mechanical means of a large volume of air over the heating surface of warm air furnaces increases the efficiency of the furnace considerably. The film of air in direct contact with the prime heating surface absorbs a far greater amount of heat than it would under gravity conditions.

By removing the heat generated by the grate more rapidly it natu-

ally increases the efficiency of the surface and also makes possible the maintaining of a higher rate of combustion, thereby obtaining a far greater amount of service per square foot of grate area than it would be possible to obtain under gravity conditions.

With the fan in operation it is possible to direct and divert the air to all corners of the area to be heated, by the proper manipulation of dampers.

The fan in operation creates and builds up within the system a pressure. The fan, drawing its air supply from within the building, creates a positive circulation, which in turn moves the cubical contents over the heating surface numerous times per hour, depending upon the C.F.M. capacity of fan.

The number of air changes required to heat a building depends upon two factors. The total loss in B.t.u. per hour and the entering temperature of the air to maintain 70° or any other predetermined temperature. The selection of a fan of proper capacity to maintain above condition by delivering the

proper volume divided into the cubical contents of the building equals the air changes that will take place in the building.

Forced warm air heating is applicable to all types of buildings, to-wit: garages, churches, schools, theaters, halls, etc., each having their individual method of application.

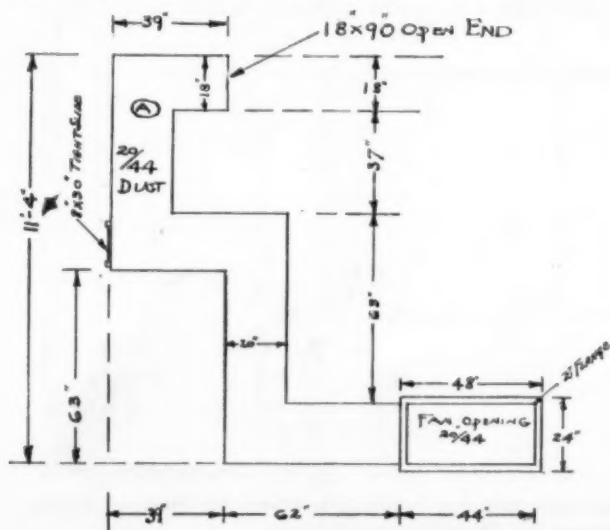
### Some Buildings Lend Well to Forced Air Heat

The heating design of the village hall of Oostburg, Wisconsin, in conjunction with this article is a particular type to which a system of fan heating lends itself admirably.

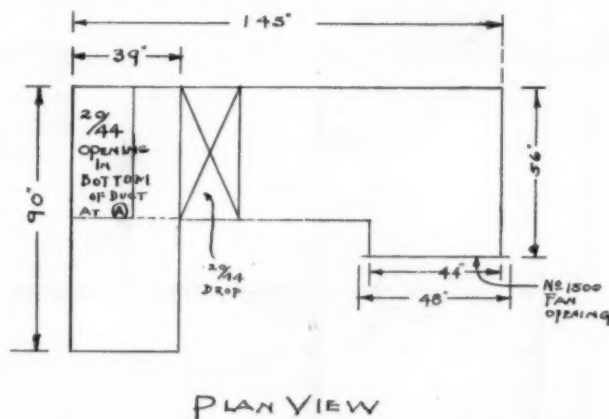
The plan in itself is explanatory. A Number A-60 Mueller tubular direct fired forced air unit was selected to offset the heat loss of this building experienced in 24° below zero weather.

The heat loss was based on 14° weather, which is 10° warmer than the extreme temperature encountered in the past 10 years and allowable under Code rules.

To offset this loss a Number A-60 Mueller tubular heater was selected.

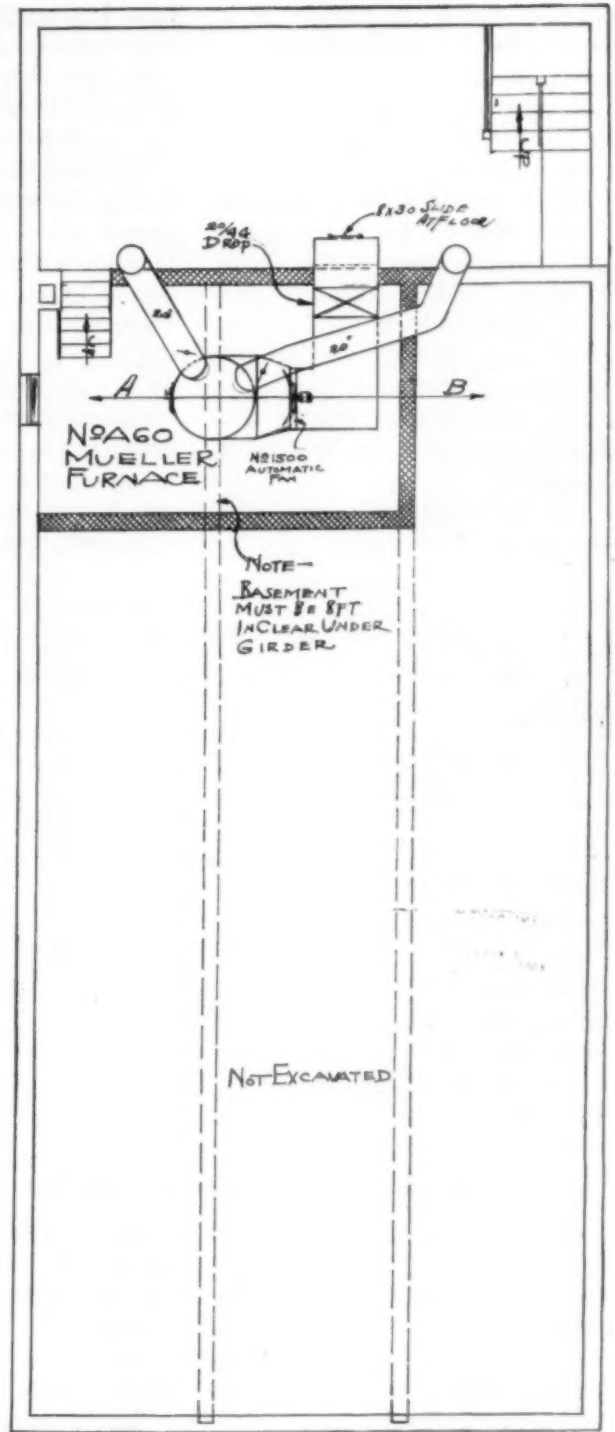
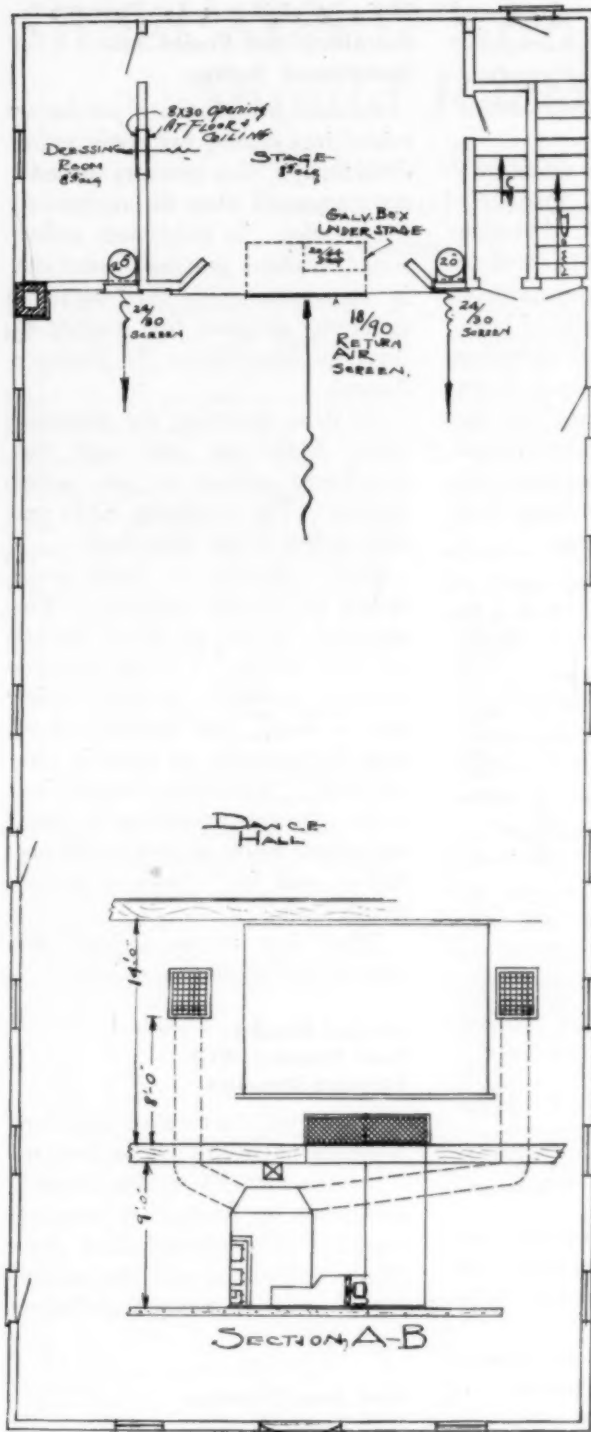


Plan View of Village Hall, Oostburg, Wisconsin



PLAN VIEW





Installation Made by G. H. Ebberts, Oostburg, Wisconsin

This heater was not selected on firepot size, but on square feet of heating surface, because the extent and the kind of surface, the location of that surface and its proximity to the direct rays of the fire in the heater determines the effectiveness of a heater to raise the temperature of the air passing over the surface.

The ratio of grate to heating sur-

face is 31.3 to 1, making this excess surface over an ordinary type furnace, having the same grate dimension 22.6% more efficient on a gravity basis.

The addition of the Number 1500 Miles fan makes this unit exceedingly efficient in that the constant air movement over the extensive surface is absorbing the heat

as quickly as generated. The absorbing surface being on a ratio of 31.3 to 1, the stack temperature at all times is kept at a minimum and only a sufficient intensity to maintain a good draft.

#### Fan Can Be Made to Operate on a Gravity Basis

The actual loss with a fan operated system is, therefore, negligi-

ble. The fan, being equipped with louvers, can alternately be used as a gravity or fan system. The louvers open automatically upon the release of pressure, placing the system on a gravity basis.

It will be noted from sectional elevation that the low point of the heat screens extend 8 feet above the floor. The heat created by this elevated heat outlet in itself creates considerable velocity, allowing the operation of the apparatus on a gravity basis in mild weather and at such times when the building is unoccupied.

The following table gives the data on the village hall:

	EW NS			
Room dimension .....	86 x 35 x 14			
Cubic feet of space.....	42,140			
Room floor area.....	3,010			
Floor constant and factor.....	9			
Ceiling " " ".....	13			
Windows " " ".....	93.5			
Wall " " ".....	14.9			
Exposed sash and door perimeter.....	436			
Leakage C.F.M. per ft. of perimeter.....	185			
Exposed gross wall area.....	2,734			
Exposed window area.....	E 168	N 92	W 168	
Exposed net wall area.....	E .....	N .....	W .....	S .....
Exposure direction—Total .....	808	398	808	292
Room temperature—70°				
Outside temperature—14°				
Heat losses:				
Wall loss B.t.u. per hour.....	39,825			
Window loss B.t.u. per hour.....	47,965			
Floor loss B.t.u. per hour.....	27,090			
Ceiling loss B.t.u. per hour.....	39,130			
Leakage loss B.t.u. per hour.....	80,660			
Infiltration loss B.t.u. per hour.....	71,638			
Total.....	306,308			

#### Data on Warm Air Heating System in Village Hall, Oostburg, Wisconsin

When the temperature outdoors recedes or the hall is occupied on short notice, the peak load can be taken care of by the turn of a switch. The air is returned to heater through a screen erected in the base of the stage.

A 20x44 galvanized duct is dropped to a floor level beneath the stage, the duct then passes through a wall and again drops to a level of the top of heater base ring, from which point it extends to the fan frame and is then connected to the heater by means of a galvanized iron expander.

Forced circulation of air is planned on the same principle as gravity, but due to the positive pressure created within the appa-

ratus the energy of the fan system, higher air velocities, lower temperatures, and higher rates of combustion are obtainable, the result equals higher efficiencies.

To obtain these higher efficiencies it must be remembered that only heaters with a large ratio of heating to grate surface should be used to obtain lower stack temperatures. Heaters having a low ratio of heating to grate surface and operating on a high combustion rate, waste considerable energy created on the grate, not having sufficient surface to absorb the heat generated and pass it on to the air, the excess heat is wasted through the flue.

The apparatus, as outlined, was installed by Mr. G. H. Ebberts, the Mueller dealer at Oostburg, Wisconsin.

Mr. A. J. Beilfuss is the Mueller representative in that territory.

The advantages to be gained by the user are manifold. Greater fuel economy, all air in the structure in circulation, two performance peak loads, one at the high point in gravity, the other the high point with fan in operation.

It assures delivery of warm air to all points in the area to be heated. It also provides a means of cooling the structure through frequent changes of air in warm weather. It is a means to both ends—it heats and ventilates.

#### Majority of Warm Air Furnace Installers Not Fooled by Installment Selling

Furnace installers are not being misled into dealing out credit indiscriminately. This becomes immediately apparent when the answers to the question, "Is installment selling sound business practice?" sent out in connection with the work of gathering material for AMERICAN ARTISAN 33rd Warm Air Furnace Annual.

Of those returning the questionnaire, 57.69 per cent said that installment selling is not sound practice. The remaining 42.31 per cent replied in the affirmative.

Such remarks as these were tacked on to the question: "Yes and no," "if you get good interest on your money," "if one has the required capital," "if good judgment is used," "not as practiced by most furnace men we come in contact with," "it increases volume, but it also increases trouble, as no heating system works as well as the one that is paid for," "with a twelve-month limit."

These few straws indicate the general feeling on the subject.

#### Pitched Hood Is Most Popular With Furnace Installer

Warm air furnace installers favor the pitched to the flat hood on a furnace. This is evident from a poll taken by AMERICAN ARTISAN recently. The pitched hood drew 85 per cent of the vote, the remaining 15 per cent casting their ballots for the flat top.

#### Cast Iron Furnace Still Most Popular With Installers

The cast iron furnace is still the most popular with warm air furnace installers. A poll of representative furnace dealers revealed the fact that 69.23 per cent of those returning the questionnaire favored the cast iron furnace. Another 26.92 per cent voted for the steel furnace, while 3.85 per cent reserved judgment to be decided by conditions existing where furnace is to be installed.

# Sheet Metal Shop Tool Arrangement Should Receive Consideration

*Machines Should Be Placed So As to Avoid Excess and Needless Carrying of Materials*

By L. BROEMEL, Sales Engineer, The Peck, Stow & Wilcox Co.

**S**HOP arrangement is as vital a sales asset to the sheet metal shop owner as is an attractive shop front or a prosperous-appearing, ready-to-do-business office. The arrangement of the sheet metal shop, however, must be considered more from the practical than from the artistic viewpoint and considerable will depend upon the financial ability of the owner, for not in every case can he afford a shop that may prove ideal.

## Avoiding Idle Floor Space Primary Objective

As a certain amount of equipment and a stock of materials are always essential, the subject of shop arrangement requires careful thought to avoid idle floor space as well as immediate or later congestion.

The suggestions here offered should be taken only as a guide and

enthusiasm must be tempered by circumstances. The plans will call for alteration and general revision according to conditions and the floor space available.

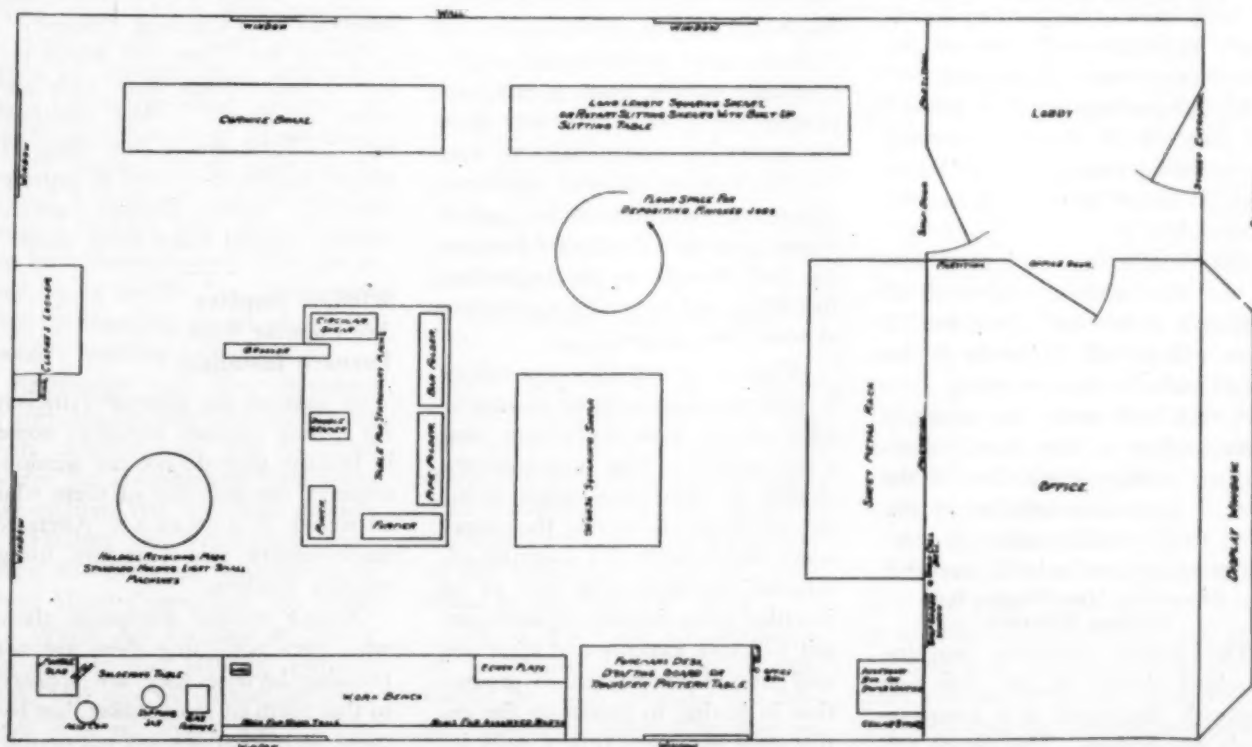
The floor plan shown in the accompanying illustration will serve as a basis for laying out a well-equipped shop. The work benches are planned in relation to amount of equipment specified, noting that the equipment is properly placed for suiting more advantageously that particular shop. A scale is not given in connection with the accompanying floor plan, as it is left to the reader to visualize his own shop, making these suggestions fit in where they will as the amount of floor space may allow.

For the handling of work that does not run large, the table for stationary machines in the illustration

is well arranged, but generally where machines are employed as many as the table specifies, relief for any congestion may be found by making a floor machine out of the rolls or former and the grooving machine. Iron floor legs can be furnished for the former and an iron floor pedestal for the groover at a nominal cost.

## Work Should Move Around Shop with Least Labor

Both the 36-inch and long length squaring shears are easily accessible to the sheet metal rack of several tiers and of a size to receive sheets 36 by 120 inches. As far as possible benches and equipment should be arranged so that after the sheets are cut up the work will move around the shop with as little lost motion as possible. It often happens that in a fairly good sized shop



Floor Plan of Sheet Metal Shop Showing a Suggested Arrangement of Benches, Racks and Equipment



the brake is located too far from the squaring shears. Or the former or rolls are not convenient to either the squaring shears or the brake.

The customary routine of operations is: Shearing, folding or edging, forming, grooving, beading, burring, turning, wiring and double seaming. Punching may fit anywhere, as best suited to the amount of punching done. With these operations following in their order, location of the machinery called upon to perfect those operations should be arranged in somewhat the same convenient order.

The benches are of substantial construction. The legs are of pressed steel. The edges of benches are protected against wear by attaching a length of 2 by 2 by 3/16-inch angle iron.

The work bench for hand and stake operations is built along the wall. Its length should be governed by the size of the shop, more commonly constructed in 10 or 12-foot lengths, 24 or 30 inches wide and 33 inches high. A rack built under the bench, 6 inches above the floor, comes in handy for holding the assortment of stakes used.

The bench plate of standard size, 30 by 8 inches, for holding bench shears and stakes and a vise or two completes the bench equipment.

An independent bench or part of the above work bench is reserved for soldering, measuring 4 or 5 feet long, 24 or 30 inches wide and 33 inches high.

The bench for stationary machines, also with a height of 33 inches, is 4 feet by 6 feet, but, if space will permit, 5 feet by 8 feet would make for less crowding.

A rack built under this bench, 6 inches above the floor, offers further storage space, but in the case of great accumulation of finished stock suitable racks for storage purposes can be built overhead.

#### **Showing a New Fixture for Holding Materials**

The holdall revolving machine standard shown in the plan and herewith illustrated is a comparatively new fixture. This device will conserve bench room. It holds four small machines on the revolving

arms and four more on the lower stationary rack ready to be transferred to the upper turret when needed.

The holdall revolving machine standard will hold the thick edge or turning machine, wiring machine, thin edge or burring machine, crimping and beading machines, setting down machine, swadging or beading machine and elbow edging machine. This makes up the complete set of small machines.

Where the holdall revolving machine standard is not used, small machine operations are completed by having these small machines and their standards fastened to the work bench. When not in use, they are placed in the rack built under the work bench or hung on a wall rack. Early wear of these machines, throwing them out of adjustment or breaking any of their parts is avoided by giving them a fixed place on a bench or utilizing the revolving machine standard, noting its largest part measures only 30 inches in diameter, calling for a minimum amount of room. The sheet metal shop owner does not enhance his prospects for expansion by cramping himself for bench room, providing he has the floor space.

It is good practice and more profitable where space permits to provide for more bench room than the immediate needs may call for. As the business grows, additional equipment must be provided, and if ample room and the proper location has had thought in the beginning, this detail will not call for attention at some later period.

Whether or not they can afford it, most shops, as a result of experience, know what equipment that shop needs. These requirements should be anticipated when laying out the shop. Reserving the proper space and location for essential additional machines that are to be installed when finances or work permit will save expense and labor and will prevent interruption of production in having to rearrange the entire shop plan each time it calls for some single piece of new machinery.

For laying out shop floor plans and when taking into consideration any certain machines that might be required at some future time, the manufacturer is always glad to give the overall dimensions of any machinery as selected from their catalogues.

#### **Here's Good News for Makers of Forced Warm Air Equipment**

Forced air installations are not every day occurrences to most warm air furnace installers as yet. In most instances where the installer has come in contact with them, however, he is favorably impressed.

AMERICAN ARTISAN furnace annual questionnaire asked, "What has been your experience with fans in the matter of increasing heating efficiency of warm air furnaces?" Of those answering, 56 per cent said they had had no experience. Forty-two per cent reported favorably, while only 2 per cent said their experience had been unfavorable.

Characteristic replies of those answering favorably were: "Good"; "Fine"; "We have found forced air beneficial in increasing efficiency."

Among the 2 per cent which reported unfavorably were such answers as these: "Not satisfactory"; "Fans are a fine thing if proper judgment is used in putting them in. Believe average furnace installer should leave them alone."

#### **Window Displays Are Popular With Furnace Installers**

In spite of the extreme criticism for which furnace installers come in because they do not use window displays, the majority of them who answered AMERICAN ARTISAN questionnaire this year are using window displays.

Almost without exception, those who were not using them are not refusing because they are opposed to that form of sales maker, but because their locations will not permit.

Fifty-seven per cent are using them.

# How to Install Oil Burners Successfully in Warm Air Furnaces

## Article Designed to Help Installer Who Is Learning by Experience

By F. G. SEDGWICK, The Waterman-Waterbury Co.

**T**HERE is quite a difference of opinion among oil burner dealers as to whether oil burners can be successfully used in connection with warm air furnaces. Some oil burner dealers have had sad experiences trying to install oil burners in warm air furnaces; others are making such installations every day and are very well satisfied with the success that they are getting. This article is intended to lay down a few of the most necessary principles which, if followed, will assure positively satisfactory service from any properly designed oil burner when used in connection with a warm air furnace. These principles are listed as follows:

### Six Points on Oil Burner Installation

(1) Select a burner that is not too noisy. With a noisy burner the noise is communicated up through the warm air pipes into the living room and is very annoying to some people. There are many types of burners—both atomizing and vaporizing—that operate so quietly as not to be at all offensive.

(2) Do not try to make the oil burner a "cure-all" for an unsatisfactory furnace job. If a furnace has been unsatisfactory with coal as fuel, it is hardly fair to assume that by changing to oil all of the owner's troubles will disappear.

Knowledge of the Standard Warm Air Heating and Ventilating Code adopted by the National Warm Air Heating and Ventilating Association, the American Society for Heating and Ventilating Engineers, the National Association of Sheet Metal Contractors, the Western Warm Air Furnace & Supply Association, the Midland Furnace Club, will save oil burner dealers a great deal of worry and trouble. This Code can be obtained on application to Allen W. Williams, sec-

retary of the National Warm Air Heating and Ventilating Association, 168 East Long Street, Columbus, Ohio.

It is recommended that no oil burner be installed in any warm air furnace job which has not been satisfactory with coal until such job is made to comply with the provisions of the Standard Code. It is further recommended that all new warm air furnace installations with which oil burners are to be used be made in accordance with the Standard Code.

(3) It is suicide for the oil burner dealer to attempt to install his oil burner in a leaky furnace. Before making the installation, the furnace should be carefully examined; cracked sections should be replaced; joints should be carefully cemented. This necessitates taking the furnace down and resetting by an experienced furnace installer. The reasons for special care are obvious; especially in the case of atomizing burners it is known that when the burner is first started there is considerable pressure within the furnace, which, if there are leaks, will result in the actual seepage of smoke and oil vapor into the living rooms.

### One Primary Cause of Overheated Stacks

(4) Some warm air furnaces are built without sufficiently long fire travel, which occasions stack losses that are altogether too high. This is important not only from the standpoint of economy, but because of the additional fire hazard incidental to the overheated stack.

(5) If the warm air furnace is of a jointed type, special care should be taken to make the ashpit bottom oil tight, otherwise an accidental overflow of oil into the ashpit might allow leakage out into

the casing space, resulting in permeation of the air of the entire house with oil vapors and entailing a possible dangerous fire risk.

(6) It must be remembered that the warm air furnace as ordinarily constructed is designed for burning coal, and that the coal fire is always above the grate level.

It is sometimes practiced in connection with oil burner installations to install the burner in the furnace ashpit. If this is done, it is readily apparent that the fire is below normal or intended fire level for the warm air furnace. In this case there is considerable danger of radiant heat from the oil burner fire radiating out into the cold air shoes and warming these cold air shoes to such a point that the flow of cold air into the furnace will be stopped or at least seriously slowed down.

### Where Radiation Shields Are Useful

It is, therefore, good practice whenever an oil burner is to be installed in the ashpit of the furnace, either to set the furnace up on brick piers six inches high or to install radiation shields midway between the furnace body and casing to intercept this radiant heat. Such radiation shields should consist of one sheet of black iron, installed midway between the furnace and casing. The bottom of this sheet should extend down to half the height of the cold air opening and should extend up at least six or eight inches above the top of the cold air openings.

The oil burner dealer who follows these few simple recommendations will find a profitable field for his sales and will obtain a satisfactory volume of business free from the grief that has sometimes spoiled the profit in selling oil burners in connection with warm air furnaces.

# Find Inadequate Cold Air Supply Greatest Offender in Warm Air Heating

## Outlining Method of Figuring Pipe Capacities Used by Excelsior Engineers

**A**N annual event of interest to the warm air industry is the early winter conference of the branch house managers, sales managers and salesmen of the Excelsior Steel Furnace Company at the home office in Chicago.

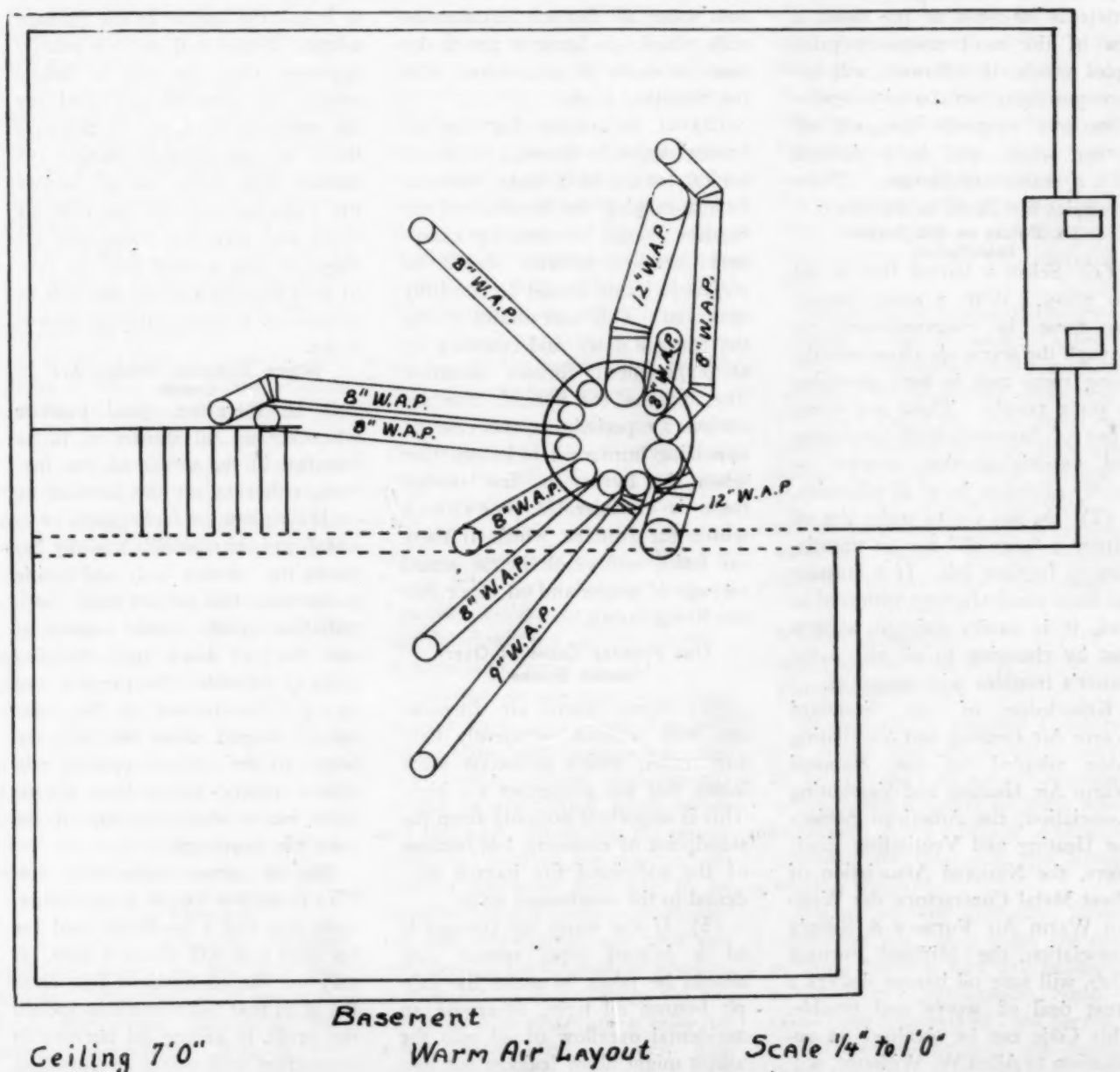
In addition to the usual entertainment much time is given to furnace installation, with a discussion of plans prepared by their engi-

neering department. At the recent gathering chronicled by this publication plans were presented showing an efficient installation in a country home of moderate cost where a low basement prevented the very best results being obtained. We are pleased to present these plans, together with a statement of the application of the famous Excelsior rule used with great success

by many furnace dealers throughout the country which was used in figuring this job.

### Applying the Excelsior Formula

"On the accompanying plans you will find a layout of a two-story residence in accordance with our formula found on the last few pages of Excelsior furnace catalog. For example, take room No. 2 on

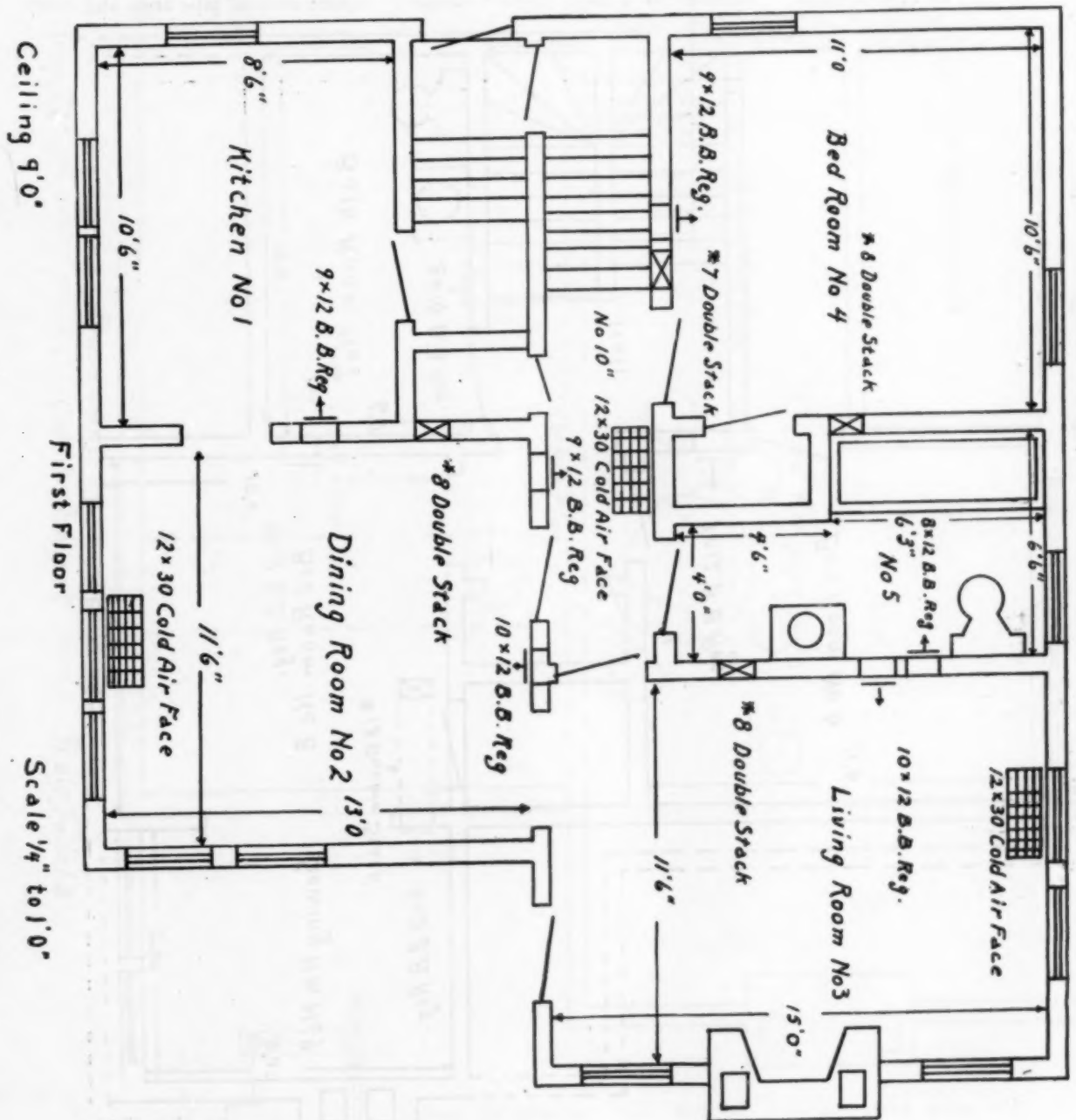




the first blue print, 11 feet 6 inches by 13 feet with a 9-foot ceiling,

and you will find that the cubical contents of same is  $1,345\frac{1}{2}$ .

Divide same by 100 and you will have 13. The exposed walls,  $24\frac{1}{2}$



## Room No 1

Cut.  $10\frac{1}{2} \times 8\frac{1}{2} \times 9 = 803\frac{1}{4}$  or 8  
 Wall  $19\frac{1}{2} \times 9 = 171$  or 17  
 3 Windows  $2\frac{1}{2} \times 5 = 37\frac{1}{2}$  or 38  
**Total** 63  
 or 9" Pipe

## Room No 2

Cut.  $13 \times 11\frac{1}{2} \times 9 = 1345\frac{1}{2}$  or 13  
 Walls  $24\frac{1}{2} \times 9 = 220\frac{1}{2}$  or 22  
 5 Windows  $2\frac{1}{2} \times 5 = 63$  or 63  
**Total** 98  
 or 12" Pipe

## Room No 3

Cut.  $15 \times 11\frac{1}{2} \times 9 = 1552$  or 16  
 Walls  $33 \times 9 = 297$  or 30  
 4 Windows  $2\frac{1}{2} \times 5 = 50$  or 50  
 1 Door  $3 \times 7 = 21$  or 21  
**Total** 118  
 or 12" Pipe

## Room No 4

Cut.  $11 \times 10\frac{1}{2} \times 9 = 1039\frac{1}{2}$  or 10  
 Walls  $21\frac{1}{2} \times 9 = 193\frac{1}{2}$  or 19  
 2 Windows  $2\frac{1}{2} \times 5 = 25$  or 25  
**Total** 54  
 or 8" Pipe

## Room No 5

Cut.  $6\frac{1}{2} \times 6\frac{1}{4} \times 9 = 527\frac{1}{8}$  or 5  
 Wall  $6\frac{1}{2} \times 9 = 57$  or 6  
 1 Window  $2\frac{1}{2} \times 5 = 12\frac{1}{2}$  or 13  
**Total** 24  
 or 8" Pipe

## Room No 10

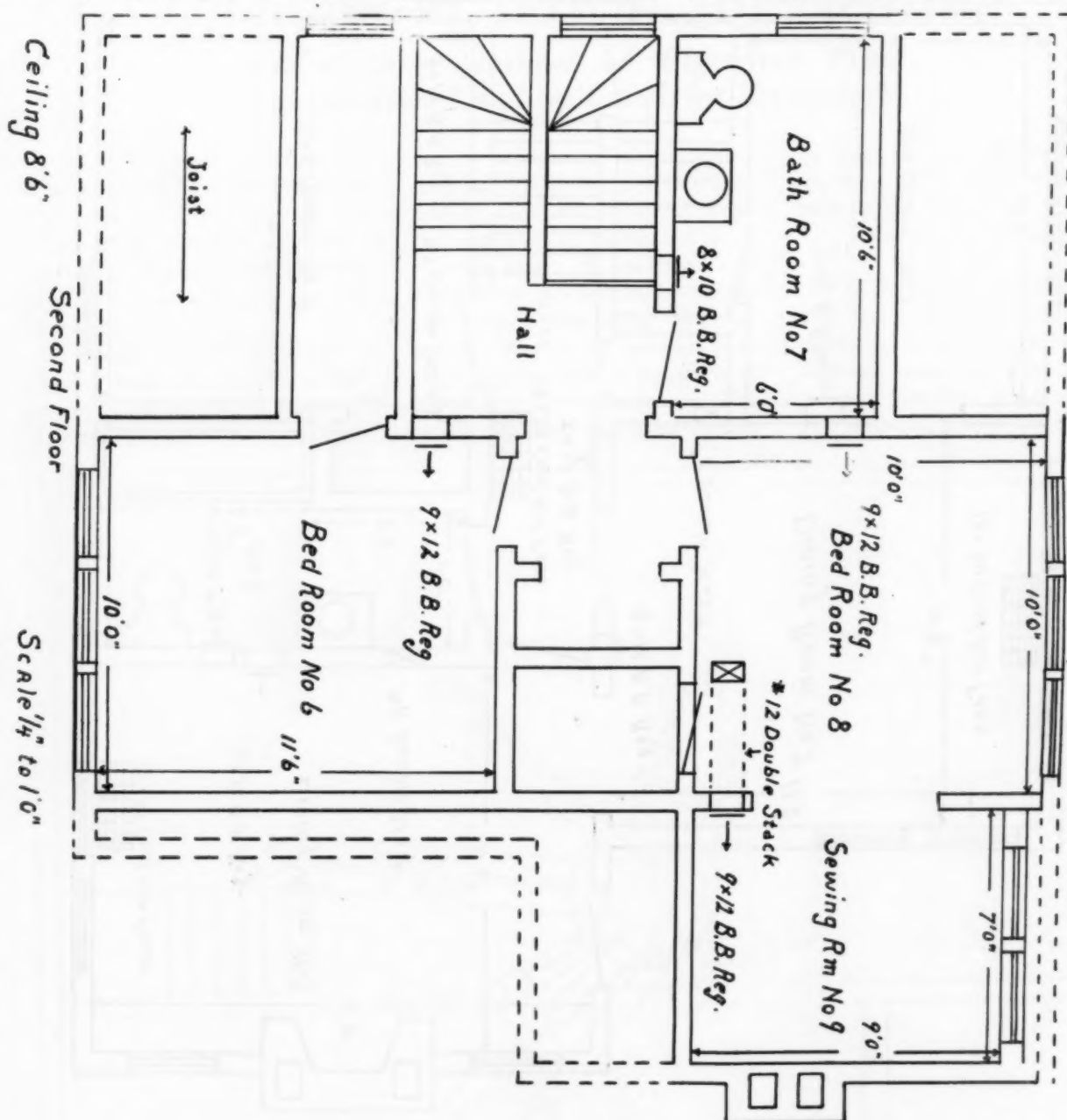
Cut.  $17\frac{1}{2} \times 3 \times 9 = 1103$  or 11  
 Walls  $10\frac{1}{2} \times 7 \times 8\frac{1}{2} = 74\frac{1}{2}$  or 7  
 3x5 = 15  
 1 Window  $2\frac{1}{2} \times 5 = 12\frac{1}{2}$  or 13  
**Total** 31  
 or 8" Pipe

by 9, equal  $220\frac{1}{2}$  square feet, which, divided by 10, equals 22. Five windows,  $2\frac{1}{2}$  by 5, each equal

$67\frac{1}{2}$  square feet or 68.

"Every 100 cubic feet of cubical contents of a room takes 1 square

inch of pipe area; every 10 square feet of exposed wall surface, 1 square inch of pipe area, and every



### Room No. 6

Cuft.  $10 \times 11\frac{1}{2} \times 8\frac{1}{2} = 977\frac{1}{2}$  or 10  
Walls  $10 \times 8\frac{1}{2} = 85$  or 9  
3 Windows  $2\frac{1}{2} \times 5 = 37\frac{1}{2}$  or 38

Total

57"

Less 25%  $44"$  or 8" Pipe

### Room No. 7

Cuft.  $10\frac{1}{2} \times 6' \times 8\frac{1}{2} = 552\frac{1}{2}$  or 6  
Walls  $16 \times 8\frac{1}{2} = 140\frac{1}{4}$  or 14  
1 Window  $2\frac{1}{2} \times 5 = 12\frac{1}{2}$  or 13

Total

33

Less 25%  $25"$  or 8" Pipe

### Room No. 8

Cuft.  $10 \times 10 \times 8\frac{1}{2} = 850$  or 9  
Walls  $10 \times 8\frac{1}{2} = 85$  or 9  
3 Windows  $2\frac{1}{2} \times 5 = 37\frac{1}{2}$  or 38

Total

56

Less 25%  $42"$  or 8" Pipe

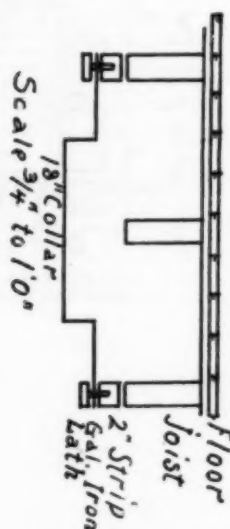
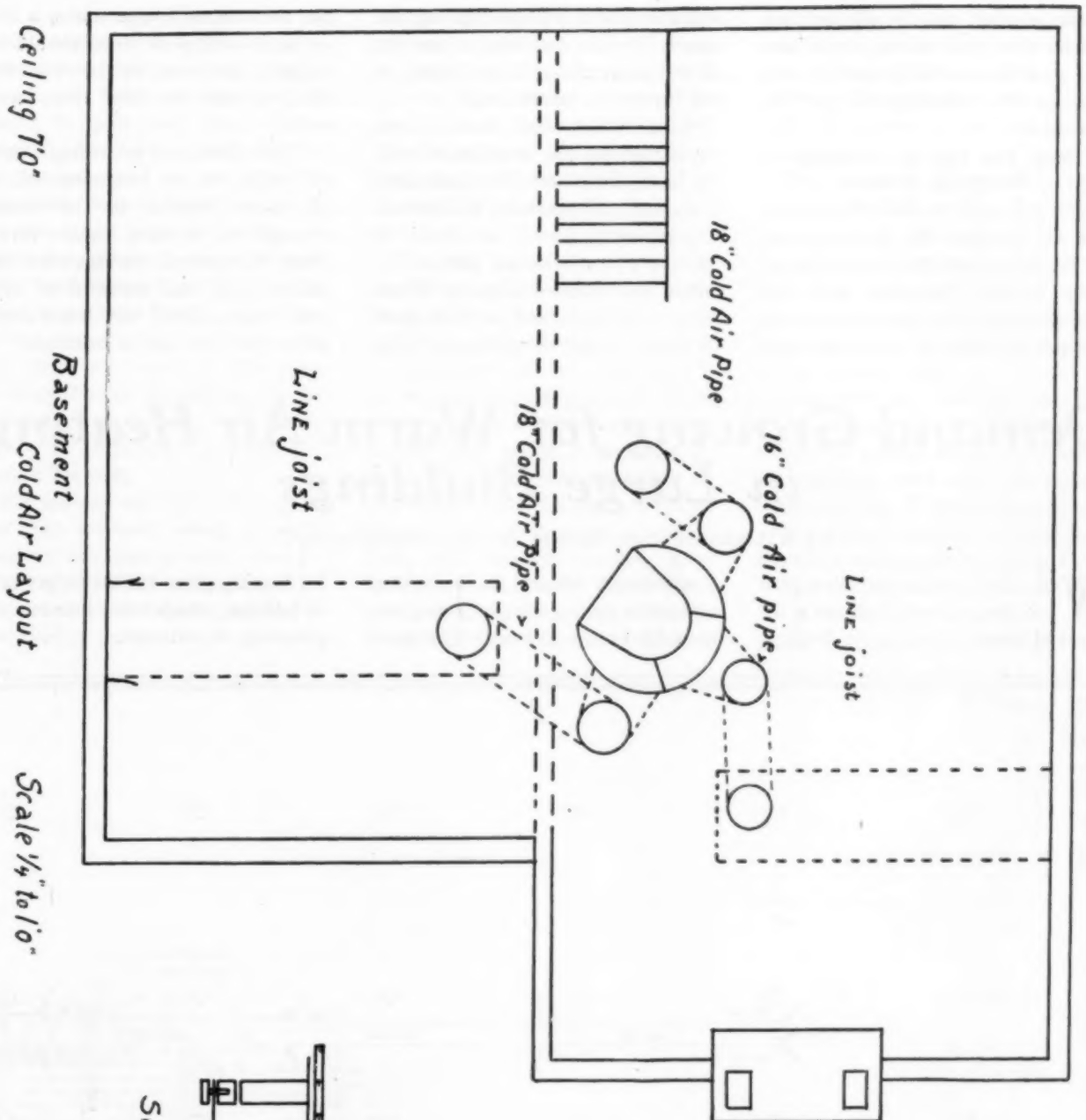
### Room No. 9

Cuft.  $9 \times 7 \times 8\frac{1}{2} = 535\frac{1}{2}$  or 5  
Walls  $25 \times 8\frac{1}{2} = 195\frac{1}{4}$  or 20  
2 Windows  $2\frac{1}{2} \times 5 = 25$

Total

50

Less 25%  $37\frac{1}{2}"$  or 8" Pipe



square foot of glass and outside doors, 1 inch of pipe area, so you have 13 square inches of pipe area for the cubical contents, 22 square

inches for exposed walls and 68 square inches for windows, or a total of 98 square inches of pipe area needed. Therefore, it will take a 12-inch pipe or 113 inches to heat this room, that being the nearest regular size made.

"After figuring all of the rooms, as shown above, take the total area of the warm air pipes, which will indicate the size of the furnace needed. See capacities of Excelsior furnaces in catalog.

"After getting the total area of the warm air pipes, divide same by 2 or 3 to determine the sizes of the cold air intakes. Always use 10 to

20 per cent more cold air than warm air, as this will increase the velocity of the warm air going to the rooms to be heated and you will not have to raise the air temperature to such a high point, as the rooms will heat a great deal faster with a large volume of moderately heated air than with a smaller volume of overheated air.

"On the layout you will note that there are seven 8-inch, one 9-inch and two 12-inch warm air pipes, making a total of 636 square inches of warm air. We utilize two 18-inch and one 16-inch cold air pipes, or a total of 709 square inches,



which you will note is 10 per cent greater than that of the warm air, and an additional 10 per cent would increase the efficiency of the installation.

**Must Use Care in Installing Warm Air Furnace**

"If you will follow the above, you will eliminate the grief so many of the home owners are having, as some furnace installers have the idea that they can step into a room and tell the sizes of warm air pipes

that are needed without figuring the same. We also find that in nine out of ten cases the cold air supply to the furnace is insufficient.

"One of the plans shows a cold air layout on the assumption that the basement is very low and there is necessity of obtaining head room. Consequently joists are lined to provide two of the air ducts. To obtain the required capacity 2-inch strips must be nailed to the bottom of joists. After the galvanized iron

has been nailed to the joists, a lath or narrow strip of wood should be nailed to the same, as shown on the plan, to keep out dust from basement.

"This method of providing a cold air supply is not recommended, as all ducts should be of metal throughout, avoiding square turns. Ducts formed of passageways between joists are wasteful of fuel and should only be used when regulation ducts cannot be installed."

## Demand Growing for Warm Air Heating in Large Buildings

By WILLIAM GUNTON, Success Heater Manufacturing Co.

**W**E ARE presenting this plan for the purpose of showing the upward trend in warm air heating,

a movement which has been very noticeable during the past year, particularly in the number of requests

for heating plans for the larger type of building which come into our engineering department.

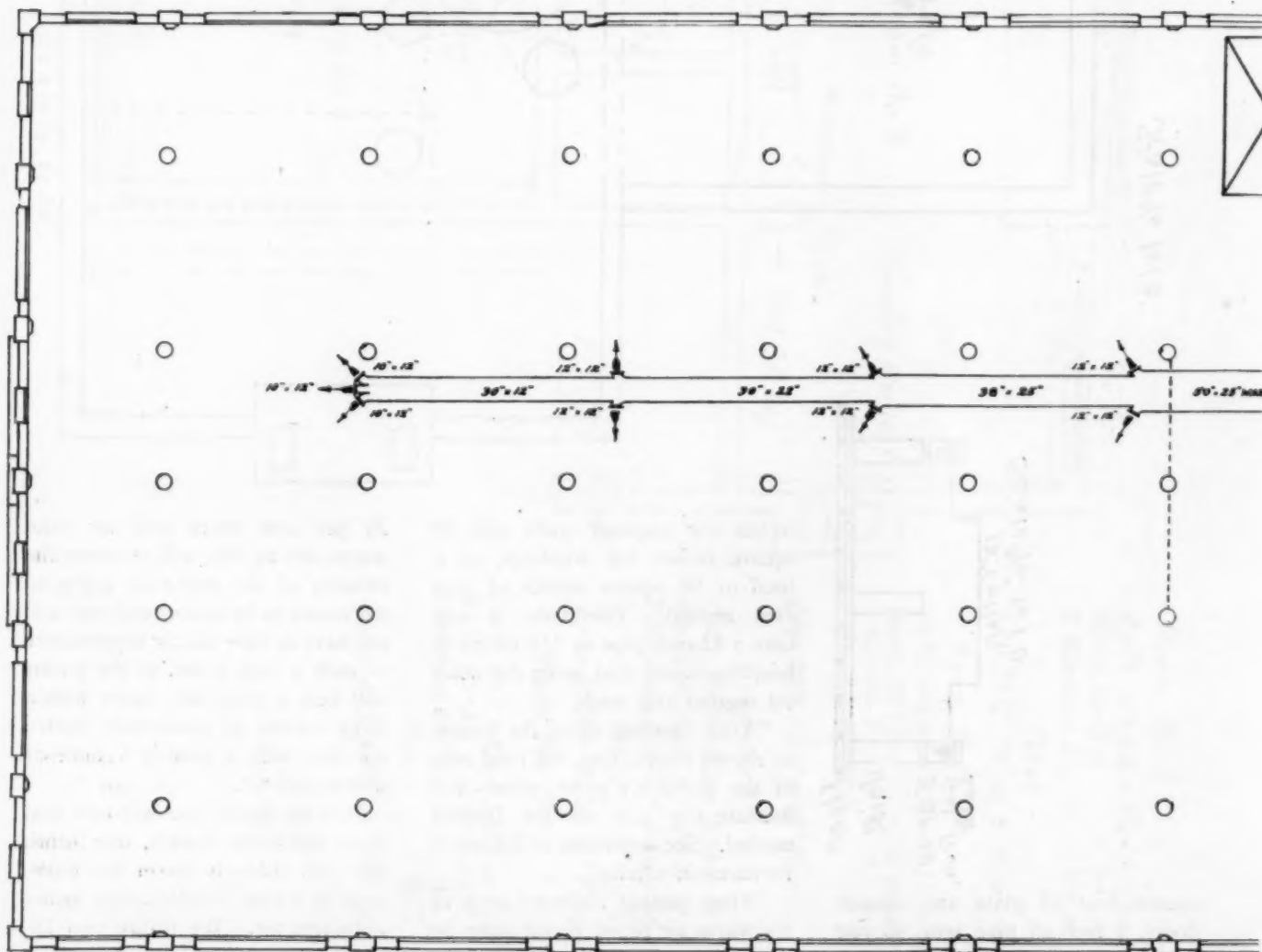


Illustration Showing Heating Plans for the Installation of a Warm Air Heating Plant in the larger type

A few years ago it was a rare occurrence to receive a plan for anything but a residence, or perhaps a church job; but now, and especially during the past year, plans for the larger type buildings outnumber the smaller ones, and we are sure that this change toward warm air heating for the larger type of building is due to the efforts of and to the publicity work being done by the National Warm Air Heating and Ventilating Association, and we hope that they will continue this great work until warm air heating for the larger type of building will in the future be as popular as steam has been in the past.

We did not sell this job, but the fact that we were asked to make plans for the heating with warm air helps to prove the coming popularity for warm air heating for buildings even of this size.

This building is five stories high and has a capacity in cubic feet of one million five hundred thousand, and the requirements are sixty degrees at zero, with an arrangement whereby one-half of the heating system can, in mild weather, be used independently of the other half and still distribute heat to each floor.

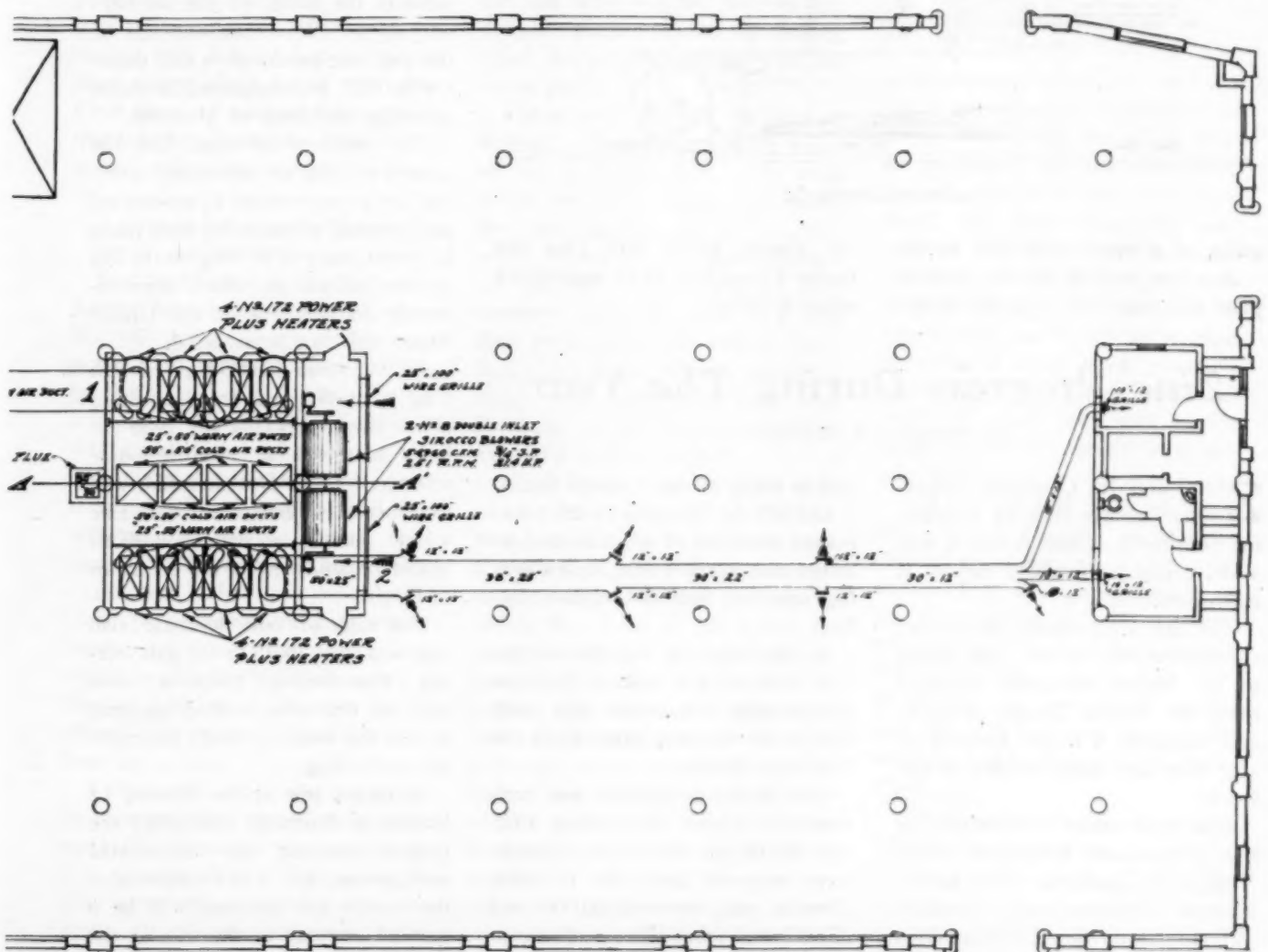
The heat losses we computed by the B.t.u. method and found to be three million four hundred sixty-eight thousand per hour, which with a combustion rate of eight pounds per square foot of grate per hour, would require a grate area of sixty square feet, which is supplied by eight No. 172 Power plus warm air generators. The heaters are placed in two rows of four each, back to back, with an air chamber sixty inches wide between the heaters, and with a partition, sixteen inches from the floor, between the two

walls, so that the air returned from each of the four upper floors through four 50x50 metal ducts can enter and travel to the fan room, which is shown at one end of the heaters.

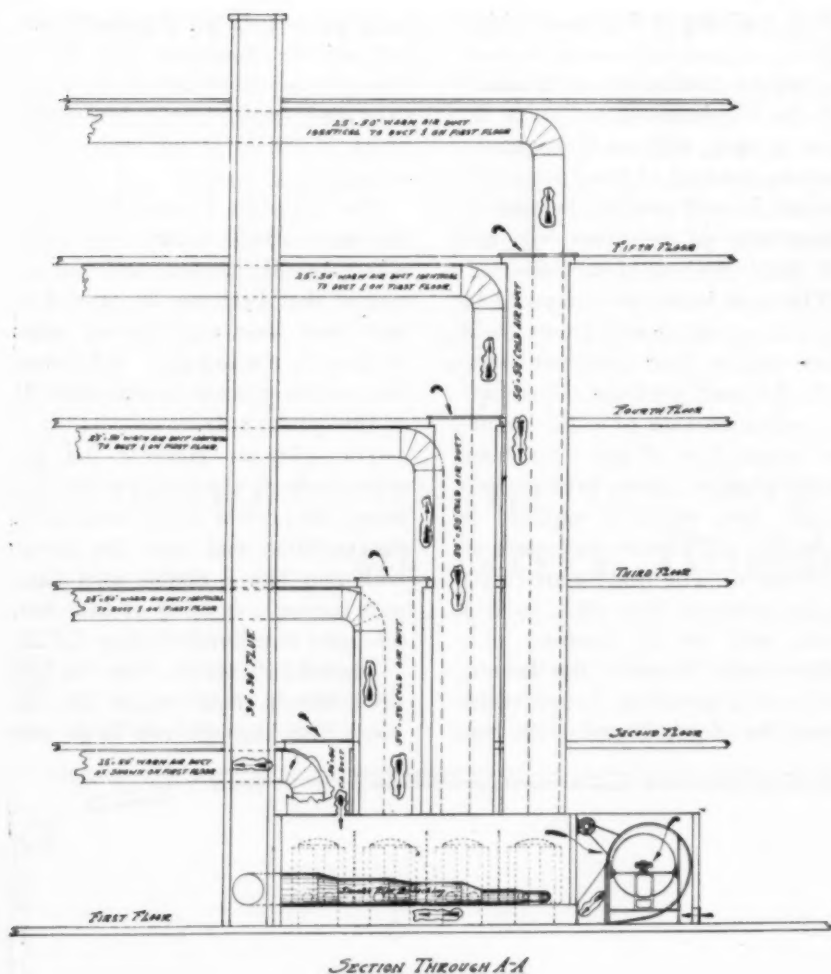
The warm air is carried through ten ducts 25x50 inches, five from each row of heaters, and so arranged that heat can be carried to each floor from each row or series of heaters, making it possible when the weather permits to run one-half of the system only.

The cold air entering the fan room through the air chamber between the heaters is put back under the partition and over the heater with two No. 8 double inlet fans, each having a capacity of fifty-four thousand nine hundred sixty C.F.M.

The cold air return from the first or basement floor enters the fan room duct through two large wire



of Building. This shows a Definite Trend of Demand for Warm Air Heating in these larger buildings



grills of adequate size for needs.

A cross section of the heating plant and each floor is shown in the

cut above, which will give the reader a good idea of its appearance when installed.

## Zinc Progress During The Year

By STEPHEN S. TUTHILL

**Z**INC and Its Corrosion Resistance" recites that an interesting peculiarity of zinc is that it was widely used industrially *before* it was discovered.

Zinc ores are generally distributed throughout the world, but owing to our higher industrial development the United States produces and consumes a larger tonnage of zinc than any other country in the world.

Zinc concentrates are produced in the Adirondack Mountains (New York); in Northern New Jersey, Eastern Tennessee and Southern Wisconsin; in the Tri-State District, at the junction of the States of Missouri, Kansas and Oklahoma;

and in many of the Western States.

In 1925 the Tri-State District out-putted one-third of the zinc concentrates used in the world, with a selling value of forty-five million dollars.

In the first six months of this year over 60 per cent of the zinc concentrates converted into slab zinc in this country came from the Tri-State District.

Our ability to produce zinc concentrates is such that during 1925 over 40,000 tons of zinc concentrates were exported from the Tri-State District, and between 20,000 and 25,000 tons from other sections, to those countries formerly supplied to a large extent from the Broken Hill

District of Australia. These latter deposits, however, are now under conservation by the British Government.

During the past five years there have been marked strides made toward perfecting the processes of extracting zinc and lead concentrates in the Tri-State District. passing, it may be well to explain that one-sixth of the production of the Tri-State District is in the form of lead concentrates.

An authority estimates that improvements in such extraction, conducted largely in cooperation with the Bureau of Mines, has resulted in a 15 per cent increase in recoveries and an annual saving of \$5,000,000 to the miners of zinc and lead in the Tri-State District.

Gauged by monthly shipments averaging fifty thousand tons, less than two weeks' stocks of slab zinc were in the hands of the smelters on July 1. More than one-half of the slab zinc produced in this country in 1925 was out-putted in states adjoining the State of Missouri.

The smelters of zinc, like the miners of zinc, are constantly striving for improvements in recoveries, and no small advance has been made in recent years in prolonging the life of the retorts in which approximately 86 per cent of the United States slab zinc is produced.

In 1925 over 65,000 tons of slab zinc were shipped from smelting plants for export, but the 1926 exports have so far been seriously affected by the British strike and Continental offerings of slab zinc which under normal conditions would be absorbed in the countries of origin.

One-half of our domestic slab zinc was used in 1925 for galvanizing (zinc coating) purposes; one-half of this zinc coated material was in the form of sheets for roofing and siding.

A recent test at the Bureau of Standards definitely established the fireproofness of the zinc-coated steel garage, and it is expected that the results of this test will be a marked increase in the sale of the galvanized (zinc coated) material for such purposes.



# Pointers on the Construction of Patterns for Cold Air Ducts

## Some Facts Regarding Air Forces at Different Temperatures

By O. W. KOTHE, Principal St. Louis Technical Institute

**H**OW much does it cost? That covers the interest the general public has in warm air heating plants today. So nine-tenths of the shops and mechanics immediately proceed to accommodate them by making a job cost as little as possible, doing a horrible job, which costs the owner perfectly good money every year he uses it.

To most installers, it is much easier to cut the price of a furnace installation than to use salesmanship in boosting a meritorious service. There are a lot of folks who proclaim the Code from the rooftops in meetings of associations or among their fellows, but on the job they either don't know what the Code says, or they secretly permit questionable practices—that many a back alley shop would not stoop to.

### Calling Attention to Dirty Basements

Just lately my neighbor had some family flats built, that cost some \$22,000 apiece—wonderfully cozy places, but when it came to the heating plant, Fig. 1, shows what was done. My neighbor thought it was a wonderful job, because the firm doing the work has a good standing with the public and the architects, as well as general contractors. The warm air boots were a disgrace, when compared with Code requirements, or long established practice. But when my neighbor asked what I thought of the job, I had to lie, in order not to offend him—since he could never have understood.

I suppose a lot of folks are going to disagree with me, as those who need this reminder may not read this special article. But anyway, how many basements are scrupulously clean?—that you would be willing to lick up the air being

dragged along the basement floor? Yet! that is what each of you force tenants to do, every time you leave the cold air casing open to the cellar air. Most basements are store rooms of junk loaded with filth, which finds its way up into the rooms.

Furnace installers who advise keeping a window open, as at A of Fig. 1, are deceivers. In their own hearts they know no tenant will leave an outside window open during the winter season. Fortunately the installer does not need to pay the coal bills—nor has he ever figured out mathematically the chilling effect this practice produces on the entire plant.

Please bear in mind no furnace system is intended to operate when set in a frigid zone. The cold drafts circulate among the warm air pipes and dissipate the B. t. u.'s, which lowers velocity and increases the coal bills. We all know a cold basement shows its effect on a first floor perceptibly, and still we have high-class shops whose managers either don't know what their men are doing or who secretly proclaim one thing and do another.

If we know anything about cold air, we know definitely that a furnace located 15 to 20 feet from such a window A, will not get the cold air the way a suitable pipe would deliver it. Even if the grate, B, were located right beneath the window, A, or within 5 feet—there is nothing that would show that one-half of this cold air will immediately slip into a furnace like a fox. Indeed not; the natural tendency of this cold air is to spread—to be held in suspension by a lower cushion of air until the gravity influence, together with the other air currents set up in the basement by the heater, lets it settle to the

floor. How much of this air would actually flow into the furnace?—no one knows; but I don't think one-half of it does, and if so—the other half goes to chill the basement pipes and so cut down efficiency there.

Of course, the furnace works; it has ample cold air, no friction in the cold air duct; but think of the contaminated air; of the lower efficiency of the warm air pipes, of the cooling effect on the first floor? Which is cheapest then—which is best—which are you sold on?

### Frictional Resistance to be Reckoned With

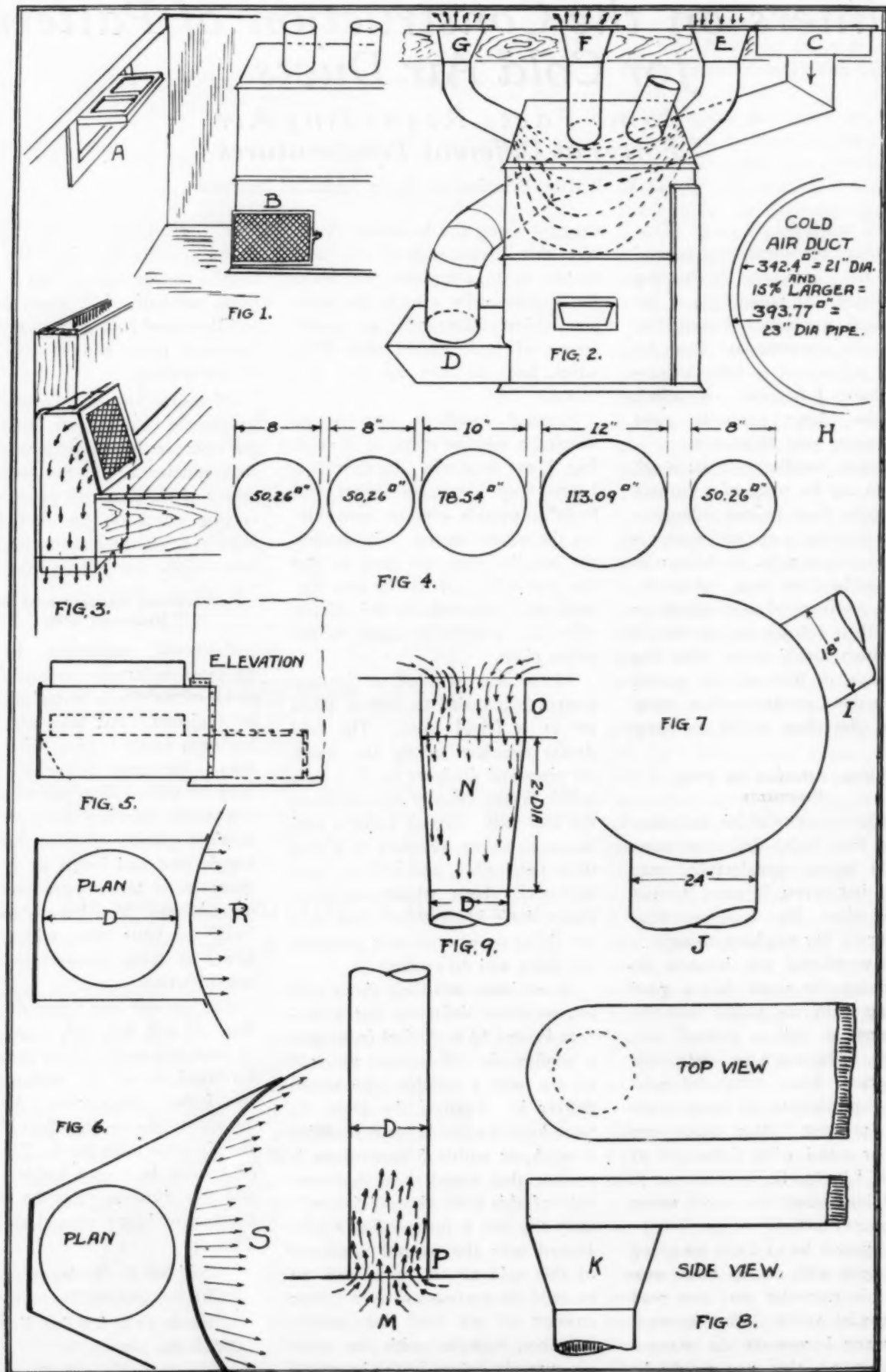
Frictional resistance in cold air pipes is largely responsible for much of the "back firing" of warm air registers. Air does not travel any more easily in pipes than water does. Air must follow the same laws of nature that you must follow while crawling on your back in tight places. If you have to wiggle past bad bends or in close channels—it takes more power to move along. You have a mind, a "will" of your own, with motive power to force yourself in a certain direction.

Air has not this force of direction. It will flow only along paths of least resistance; if air cannot go forward, it will go backward, or just form a still pocket. Air does not always rise or drop, just because the pipes are there for it. The force of gravity is a very feeble power, and this difference can be quickly overbalanced by poor cold air ducts. Thus:

Cold air at 30 deg. F. weighs .08091 lbs. per cu. ft.

Warm air at 160 deg. F. weighs .05637 lbs. per cu. ft.

Difference in weight = .02454



Cold Air Duct Construction Designs

500,000  
Warm Air Furnaces  
Installed Each Year



## 500,000 More Chances to Sell "GEM" ADJUSTABLE REGISTER SHIELDS

From the sales standpoint, there is no more timely item on the Fall and Winter hardware list than "GEM" Register Shields.

It's so much more economical and convenient to install warm air furnaces than more complicated heating systems that half a million new families do it each year. And every such installation paves the way for the sale of from two to a dozen "GEM" Adjustable Register Shields.

For once a warm air furnace is installed, then it is advisable to protect the walls, ceilings, curtains, draperies, pictures and furniture from any dust, dirt or soot that may issue from the basement.

### *The Alert Dealer Seizes the Opportunity*

Lay in a stock of "GEM" Register Shields.

Display them where they will be seen.

Place a snappily-worded placard or two alongside, pointing out what it means to any warm-air heated home to be "GEM"-Protected.

This well-timed appeal sells thousands of "GEMS" every year; it will make good profits for you.

### *Made Right—And Are Right*

"GEM" Register Shields are made of heavy, durable steel, with a handsome, *permanent* oxidized copper finish, and improve a register's appearance. Easily adjustable from 10 to 19 inches to fit any size register.

"GEM" Register Shields for wall and floor registers deflect the heat away from the ceiling into the room, and keep the dust, dirt and soot down in the basement where they belong.

Retail at:—

FLOOR SHIELD, \$1.50

WALL SHIELD, 75c

Order from your jobber.



**BEH & CO., Inc.**  
1140 Broadway, New York, N. Y.



Here we see the force of gravity between air at the freezing temperature and that of the register temperature is slightly over two hundredths of a pound per cubic foot of air. This is not much to over balance the scales. Thus, where a job, as at Fig. 2, is met with in which the cold air connection C is bad, the pipe C-D is long and full of turns, it is evident that it is much easier to "draw" air from the warm air register E, than to overcome the vast frictional resistance in pipe C-D.

If the outside winds are high, and the building is of loose construction, so that  $1\frac{1}{2}$  to 2 air changes are produced per hour, this momentum will be favorable for register E breathing. If the wind were in another direction, some other short pipe would be apt to breathe cold air, rather than expel warm air. This is only so because it is easier for the furnace to breath through pipe E than down the long duct C-D.

#### How Loose Construction Affects Momentum

A furnace that back fires, as shown at Fig. 2, will cause a circulation of air from E to flow around the radiator drum. Here it becomes heated, expands further, is pushed up by other air coming from E and D. As a result, the heat film is not removed from the fire pot, which with only a small circulation, it is apt to burn out. This is really the cause of most of the burned out heaters, because if a plentiful supply of air could be kept in circulation about the heater—that film of heat will always be removed, and the outer surface could not overheat.

#### Using Double Registered Stacks

Rooms that have no recirculating system are often difficult to heat. This is because the blanket of cold air on the floor that drops from walls and windows is so great that it overcomes the resistance of the lighter warm air. Often a double registered stack is run to heat both the first floor hall and an upstairs room. Sometime ago such a problem was brought to my atten-

tion by a very prominent furnace shop.

It was found the cold air in the hall was so heavy that it also blocked the flow to the second floor. An open pipe was suggested, as at Fig. 3, installed in the hall's coldest position. As a result the cold air dropped down to the basement, and both warm air registers functioned nicely.

Conditions of this kind, as at Fig. 3, are different than those shown at Fig. 1, because at Fig. 3, we make no pretensions of using the air over again, and this circulation is not enough to chill the basement perceptibly. In most cases the basement is too warm anyway, and to let some of the cold air of a house drop into the basement would do more good than harm. This is far different than letting outside air in, in large volumes to chill a basement. Such procedure is an extravagant waste on the coal pile.

The proper relation of cold air pipes to warm air pipes is much like the Siamese twins—they are fastened together and must go each in the right direction. Thus, at Fig. 4, we show what may be a warm air system containing five leader pipes, 3 of 8 inch, 1 of 10 inch and 1 12 inches in diameter. Each has the area given in the sections. The total area of all these pipes is 342.4 square inches. This is equal to about a 21 inch pipe, as we show above H.

It has been found by experiment that air expands while heating, and this expansion is about  $\frac{1}{5}$  of its volume. Observe, if we have a cross sectional area of 342.4 square inches in our warm air pipes, as at Fig. 4, and figure a velocity of let us say 3 feet per second for the first floor, we then have

$$\frac{342.4 \times 3}{144} = 7.13 \text{ cu. ft. of flow per second.}$$

This is  $60 \times 7.13$ , or 427.8 cu. ft. of flow per minute. Now under normal conditions where outside cold air is used, the duct should be at least equal to the cross sectional area of the warm air pipes. Experiment has proven that to make

the cold air pipes 15 to 20% larger in capacity than the combined warm air pipes contain, a considerable increase of efficiency is secured.

#### Explaining Further the Theory

The theory is this, that a larger volume of cold air being able to enter a heater, a more natural circulation is set up, and in that more air must be heated, and therefore more air is delivered to the rooms. This air may not be heated to as high a temperature, but owing to the larger volume of cold air settling into the pit, more air is expanded, and it must either take on a higher velocity, or to be heated to a higher temperature. Now, supposing, we have the 23-inch pipe at H, which contains 2.72 square feet of cross sectional area, and where air travels at the rate of 3 feet per second, we have:

$$2.72 \times 3 = 8.16 \text{ cu. ft. of air flow per second.}$$

Now if air increases  $\frac{1}{5}$  of its volume on being heated to 175 degrees register temperature, we have  $8.16 \times 1\frac{1}{5} = 9.79$  cu. ft. per second. This is the amount of air that must escape through the warm air pipes per second. This makes it evident, then, that one of several things must happen. One is, which is no doubt the most likely, that the velocity of flow increases, such as  $342.4 \div 144$

$$\frac{9.79}{2.4} = 4 \text{ feet velocity}$$

per second.

If the velocity does not increase because of possible frictional resistance in the warm air leaders, the air must be heated to a higher temperature. This again causes more heat to radiate into the basement and is more likely to burn out the heater parts.

#### Cold Air Boots an Important Item

Cold air boots on furnaces are also an important item. At Fig. 5 we show a plan and elevation of what may be called a standard boot. The boot should never be over 14 inches high, to reach over the fire pot. The aim is for the cold air to



## Another town where the sheet metal contractor gets the business

**A**T Friendship, New York, practically every roof is of Sheet Steel . . . all because Sheet Steel roofs are energetically pushed by a sheet metal contractor, Frank Thompson.

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This case proves again that the Sheet Steel contractor can get the roofing business—and profits—in his community. What Thompson did in his town you can do in yours. Call on every desirable prospect. Advertise the advantages of the Sheet Steel roof. Install quality jobs and

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# SHEET STEEL

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spread as far around the heater as possible before it reaches the heated surfaces. After the air once becomes heated, it expands and is pushed up, so that in some furnaces, the front of the firepot seldom gets any air circulation, and here it is where they are burned out in many instances.

The better design of boot is shown at Fig. 6 of the plan, and the dotted position of elevation Fig. 5. Here the height is cut down to 8 inches or so, but the width is spread to reach almost around the half of the heater, as at S. It is evident that this design and the flow of air at S is far more satisfactory than that at R.

So many firms tap the round pipe into a furnace casing, as at Fig. 7. Larger pipes are oveled to be not over 14 to 16 inches high, and if one gets higher, well nothing is said about it—the owner does not know any better anyhow.

#### Two-Pipe Cold Air Return Has Advantages

Some furnace men are opposed to running two cold air pipes into a furnace, as at Fig. 7, saying they never have had satisfactory results. But this is a case of design, where the one pipe had too much friction, thereby making the other pipe do most of the work. For instance if pipe I of Fig. 7, were poorly constructed, had a long run, was short circuited by warm air pipes, or it drew its air supply from rooms that are warmer—it is evident pipe I could not deliver its pro rata share of air. Then pipe J would deliver what it could, and if that is not enough, some warm air register would back fire.

However, I want to say, that a two-pipe cold air supply has its advantage in bringing air all around a heater, or at least assuring its larger circulation. But it requires more careful designing, more scientific understanding, more consideration for the feeble force of air.

The cold air boot or connection at C of Fig. 2 is also an evil sinner that gets into altogether too many jobs. Most of the men who use this careless connection C do not

know what friction it sets up. But cheap bids dictate most of such designs, and thousands of other men don't know any better.

#### Pipe Opening Efficiencies Important

The creating of graceful design in fittings is a real engineering feat. The design is the hardest to arrive at, and strange to say most men like smacks of designing. They like to learn to cut patterns, but that is a simple matter after the designs are effected. In Fig. 8, we show a plan and side view of a connection that should have been used at C of Fig. 2. The making of the connection K tapering is a necessity, such that is better shown in with Fig. 9.

I meet with so many who glory at the wonderful technicality of the trade—they love to think of their work as very scientific, and like to gab about the profound knowledge in geometry, in mathematics, in heating, in practical experience the trade requires. But for themselves—they would have none of it—it's for everybody else, but not for them—they prefer to remain 2% men, because that is all a person can learn by his hands. We learn 18% by hearing, and most of that is junk, mis-information, and we learn 80% by seeing with our eyes, reading, drawing, figuring, pictures, demonstrations. But only 2% is learned through the hands. Please check up on that—watch and learn.

With orifices, or openings in pipes, it all depends on the size of the opening, how built, and the flow of air or fluids which governs the efficiency of the flow. Thus, with air as with water, when it flows into a sharp-edged orifice as at M of Fig. 9, a certain contraction takes place giving a broom effect.

With water, such an orifice is but 61% efficient, meaning that only .61 of the full area is effective for water carrying. With air no better result is secured, as fan engineering hand book gives a coefficient of discharge of 60 per cent to an orifice, as we show at M.

Thus a sharp edge orifice has an

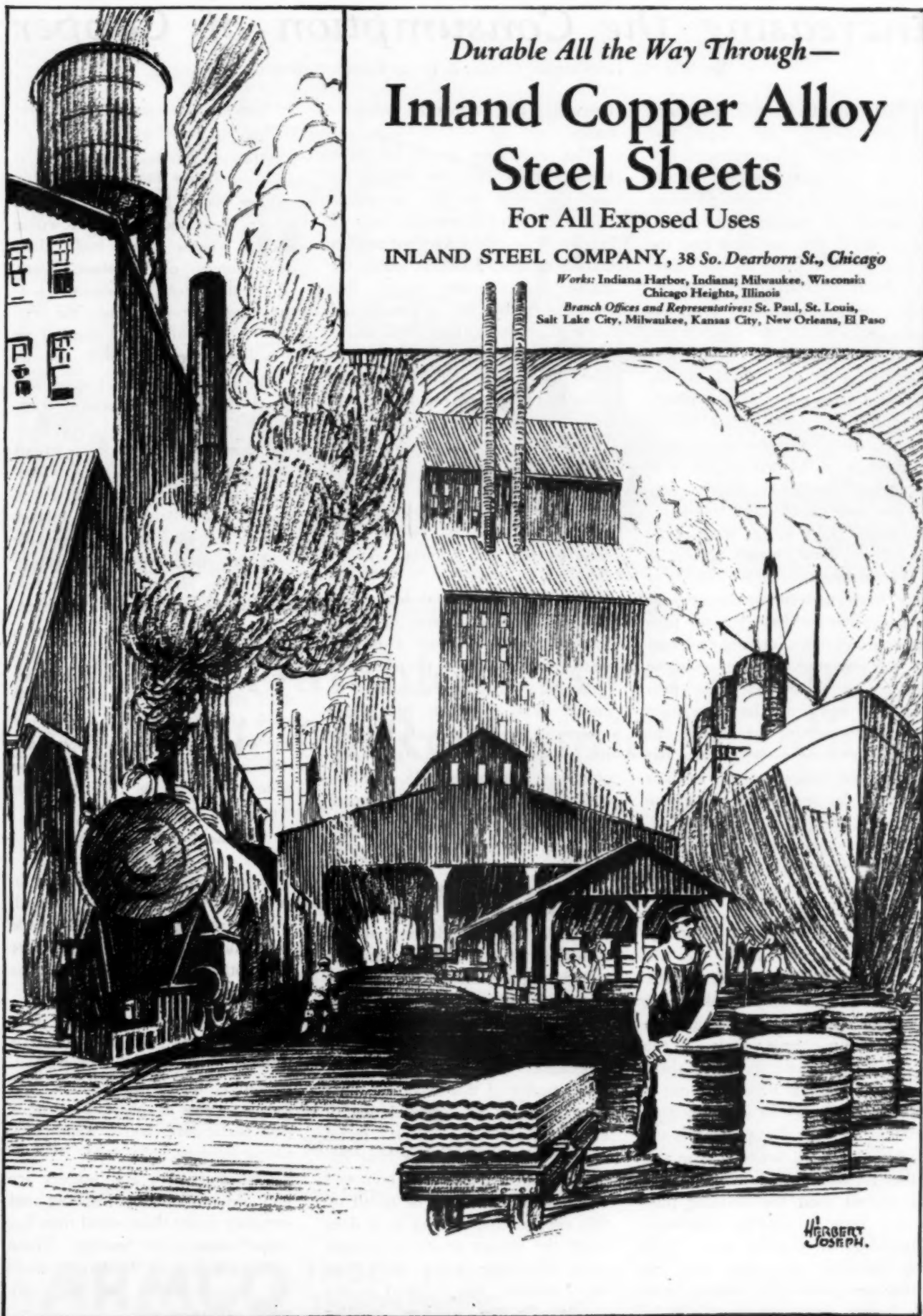
efficiency of 60%, while with a short pipe nipple, whose length is 3 diameters long, then the pipe will flow full and .82 may be used as a coefficient. But for a tapering or converging nozzle as we show at N, where the length of the nozzle is about three times the length of the orifice over the size of D would 94% is secured. Here the angle of convergence should be about 13 degrees, which ordinarily makes about two diameters of D as shown. Here the neck has a chance to expand, and so let a full flow as becomes the diameter D.

Some engineers in heating and blower work assume an orifice efficiency of 71%. This is not experimentally correct, but serves the purpose as a general average. Good engineers will adopt the proper coefficient, for the type of orifices used, and figure efficiency of the system down as fine as available data affords. However in the absence of a fuller application, we believe if the reader uses 71%, he will not be far wrong either way and he can arrive at his computations to a larger degree of accuracy. So that air flowing into a pipe having a sharp opening as M, or C, we figure it this way. The coefficient times area, times velocity gives the results. Thus our 23-inch cold air duct contains 2.72 sq. feet of area. So:

$$.71 \times 2.72 \times 3 \text{ ft. per sec.} = 5.79 \text{ cu. ft. per second.}$$

This is all the volume we can reasonably secure and this figure of 5.8 cu. ft. should be used in such computations in preference to 8.16 cu. ft. as above worked out. Warm air folks seldom go that fine in their calculation; the flow of gravity is so feeble; the velocity is ordinarily quite low, so a positive flow is not always assured at all times. Of course a positive circulation must exist, one way or another; feeble though it may be. In either case the furnace burns coal; it throws out heat; the drafts operate, and a measure of satisfaction is reasonably assured, even if some one or other register must back fire most of the time.





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When writing mention AMERICAN ARTISAN—Thank you!

# Increasing the Consumption of Copper

By WM. G. SCHNEIDER, Copper & Brass Research Association

THE unsettled conditions which prevailed in the copper and brass industries immediately following the war resulted in the formation of the Copper and Brass Research Association. The copper producer, on the one hand, and the consumer of copper, on the other, felt the need of stimulating the demand for their products. With this purpose in mind the Copper and Brass Research Association was formed for the purpose of creating a wider knowledge of the merits of our metals through advertising and publicity and also to do such research work as was necessary to locate and develop existing markets or find new ones.

## Public Quick to See Merit of Good Product

The efforts of the association to date have had to do solely with consumption and have left the production and other internal problems of our member companies to be handled by themselves. The promotional work of the association has had to appeal not only to the American consuming public, but also to the many dealers, artisans and manufacturers who would have a great interest in these efforts.

The American public is quick to recognize honest promotional work and quick to take advantage of advertised articles and materials which will prove to the advantage of the consumer. When you are advocating copper, brass or bronze, it becomes necessary to show the consumer where it is to his advantage to use these metals. In the case of copper and its alloys, there are good reasons why their use is preferable to iron or steel, plain or galvanized. Most important is the fact that copper, brass, bronze and other copper alloys do not rust. Of all metals used for building purposes, such as roofing, hardware, plumbing, sheet metal work, lighting fixtures, screening, etc., no other compares with copper, brass or bronze from the standpoint of

longevity and minimum maintenance cost.

The American people have learned the lesson that it pays to use the best possible materials available. This is true not only of copper, brass or bronze, but applies equally to other products which are classed in the quality group. For instance, in the case of gutters and leaders and other sheet metal work, we have found that those concerns who have recommended copper have had a great volume of business.

The very fact that they recommended and dealt in a quality article indicated to the American consumer that he was dealing with high-grade concerns who were handling the best materials obtainable.

The same is true with brass pipe for plumbing or bronze or brass for hardware. It is not a difficult matter to convince a purchaser of plumbing that it is economical to install brass pipe in his house where, if the house costs \$15,000, the increased charge for the brass pipe does not exceed \$75 over the cost of pipe that is sure to require replacement in a few years and in the interim need considerable re-pairing.

## Association Furnishes Quantities of Literature to Dealers

The Copper and Brass Research Association's efforts have been directed naturally toward the ultimate consumer and, to this end, we have issued considerable literature which has been furnished free of charge to dealers. Our advertising, which every reader of this magazine must have noticed, has proved highly effective and the sheet metal workers the country over have co-operated with us to their own and our mutual benefit. The result of this cooperation, coming as it does from the copper producer, copper sheet fabricator, dealer and sheet metal worker, has resulted in the consumer's—the architect, builder

or houseowner—more fully appreciating the merits of the product.

## Home Buyer Makes Inquiries Before Purchases

The stage has been reached where the American homeowning public, whether they build their own homes or purchase them, realize that there are certain essentials that will either make the running of the homes economical or very expensive.

The activities of the Copper and Brass Research Association entirely disregard prices. The Federal statutes bar trade associations from this field. It is our experience, however, and apparently also that of many dealers, that a large volume of sales at a reasonable profit are much more satisfactory from every standpoint than a few sales where the profit is exorbitant.

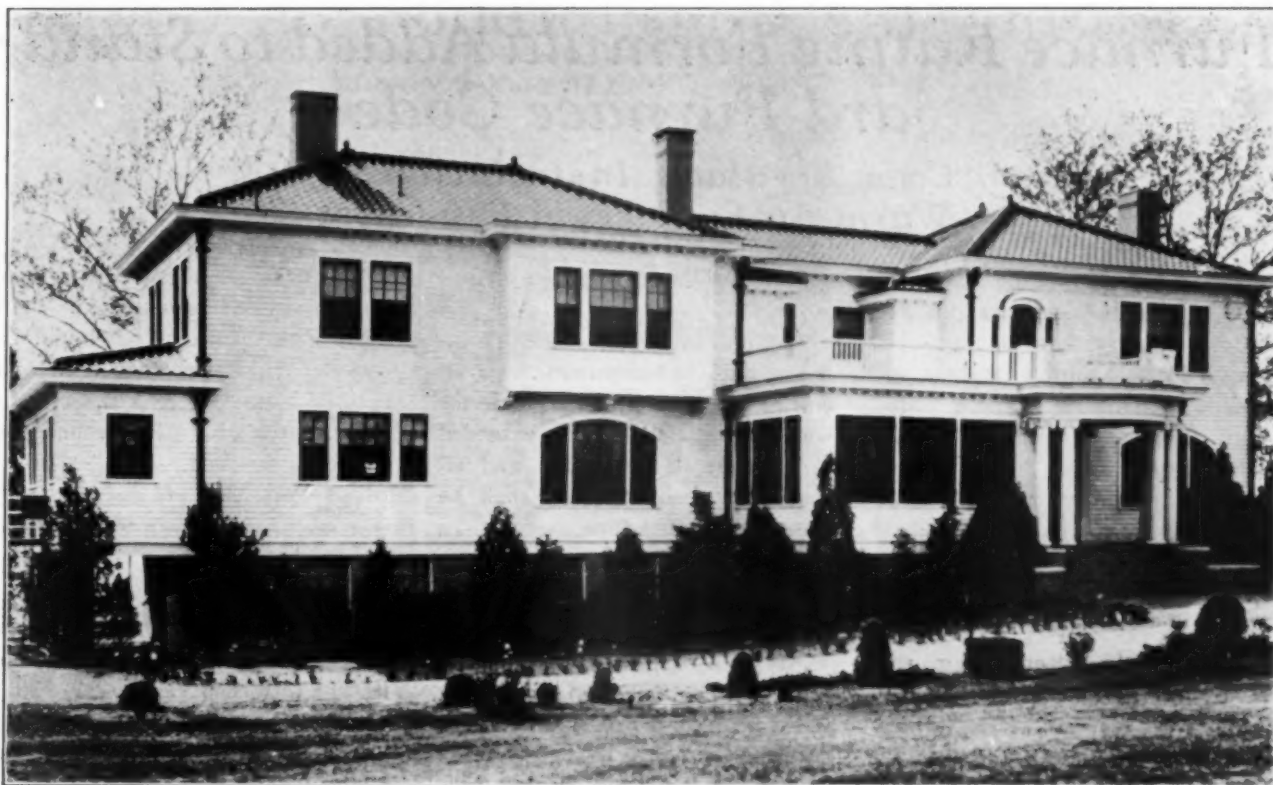
The sheet metal worker has a splendid opportunity to take advantage of our work and tie in his sales efforts with the promotional work of the association. Certainly the following outlets for copper are sufficiently large and of a scope wide enough to be of interest to every man in this field.

## Some Outlets for Copper Products

Copper flashings may be used on any and every building erected. Copper roofing is highly desirable for many smaller buildings where some other not-so-good material is now installed.

The copper cornice was very generally used years ago and it is believed that, with the proper exploitation, it will again come into its own; this is believed to be a field particularly worth while cultivating by sheet metal men.

Copper gutters and leaders are now generally being installed and certainly every sheet metal man has reaped some of the benefits. These are but a few of the large outlets for copper sheets and there are many others.



The ARMCO Ingot Iron tile roofing job on this handsome Norfolk (Virginia) residence was not only economical for the owner but profitable for the contractors, Howell & Kern, of that city

## Suggest Durable, Easy-to-Apply Metal Tile for Residential Buildings



Show this identification sign of "purer iron" to your customers. They'll recognize it as a mark of quality

**T**ILE roofing of ARMCO Ingot Iron is beautiful, durable, and economical for the homeowner. Beautiful because of that touch of old-world dignity—durable because of the rust-resisting qualities of "purer iron"—economical because of its comparatively low first cost and low service cost per year.

Then, too, this type of roofing is easy to apply—profitable work for the contractor. A metal worker with helper can lay as many as eight squares of metal tile a day on a fairly straight and uniformly pitched roof.

Shall we send you complete descriptive material and tell you where and how you may secure ARMCO Ingot Iron roofing tile?

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Middletown, Ohio

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Mention AMERICAN ARTISAN in your reply—Thank you!



# Furnace Rating Formula Added to Standard Furnace Code

## Code Regulates Installation of Warm Air Furnaces in Residences

**N**O SURVEY of the warm air heating and ventilating industry could in any sense of the word be called complete which did not include the Standard Furnace Code. Many of our readers have made special requests that the Standard Furnace Code be included in the Warm Air Furnace Special, but regardless of this, we could not feel that our work was complete without it, and so here it is.

### Standard Code Regulating the Installation of Warm Air Heating Furnaces in Residences

#### ARTICLE No. 1

#### Meaning of the Term "Warm Air Furnace Heating Plant"

Warm air furnace heating plants, to which this code refers, shall consist of one or more warm air furnaces, enclosed within casings, together with necessary appurtenances thereto, consisting of warm air pipes and fittings, cold air or recirculating pipes, boxes and fittings, smoke pipes and fittings, registers, borders and face plates, the same being intended for heating buildings in which they may be installed.

#### ARTICLE NO. 2

#### Provisions to be made in Building under Construction for Reception of Warm Air Furnace Heating Plants

Section 1. (a) The following provisions shall be made by the owner or building contractor, in any building wherein a warm air heating plant is to be installed.

(b) Where warm air register boxes, heads, pipes or stacks are to be installed, joists shall be set not less than sixteen inches (16") on centers and shall be butted and not lapped. Studding shall set directly over and under joists, leaving a space of not less than fourteen inches (14") between studs and joists. Wherever joists are

cut, headers must be put in to support joists.

(c) All first story single or sub-floors shall be continuous. In all houses having studded exterior walls, these walls shall be extended to the outside sheathing and all spaces between studding shall be closed at the attic line.

*Note 1. It is strongly recommended that the attic be tightly floored to reduce heat losses.*

(d) All partition walls (or sections of these walls) in which heat stacks to second floor rooms are to be installed, shall be built of six inch (6") studding to second story floor joists.

#### Chimneys

Section 2. (a) The owner shall provide a chimney for the furnace constructed in a manner to comply with the following specifications:

(b) The chimney must be absolutely smoke tight throughout its entire length, and must extend at least three feet (3') above a flat roof or two feet above the ridges of peak roofs.

(c) If built of a single thickness of brick or of cement blocks, it shall be lined throughout its entire length with fire clay flue lining, having not less than three-fourths inch ( $\frac{3}{4}$ ") thickness. Flue lining to be laid in mortar and made air tight.

(d) The furnace flue must have no other opening for attaching any fireplace, furnace, stove, range, water heater, gas or ventilating connection.

(e) If necessary to offset the flue, it must be done in such a manner as not to reduce the cross sectional area nor create a ledge or obstruction, where loose material may lodge.

(f) Its narrowest internal dimension shall not be less than eight

(8") inches and no flue smaller than 8" x 8" rectangular or eight (8") inch diameter round will be considered suitable when hard coal is to be burned, or 8" x 12" rectangular or ten (10") inch round for soft coal or wood.

(g) It is strongly recommended that nothing less than 8" x 12" internal dimensions be used in any case.

*Note 2. It is recommended that the height above the furnace grate be not less than twenty-six (26') feet.*

*Note 3. It is strongly recommended that all new chimneys be built in strict accordance with the ordinance recommended by the National Board of Fire Underwriters.*

#### ARTICLE NO. 3

#### Method of determining size of Warm Air Pipes, Wall Stacks and Furnaces for Use in a Residence

Method of determining size of basement warm air pipes.

(Read Explanatory Notes 4 to 11)

Section 1. First Floor Rooms.

Divide square feet of glass by 12.

Divide square feet of net outside wall by 60.

Divide cubic contents by 800.

Add together the above and multiply by 9.

The result is the area of the basement pipe.

The sum of:

Glass (sq. ft.) (Note 4)  $\div 12$

Net Wall (sq. ft.) (Note 5)  $\div 60$

Cubic Contents  $\div 800$

$\times 9 =$  Area of Basement

Pipe (Note 10)

Section 2. Second Floor Rooms.

Divide square feet of glass by 12.

Divide square feet of net outside wall by 60.

Divide cubic contents by 800.

Add together the above and multiply by 6.

The result is the area of the

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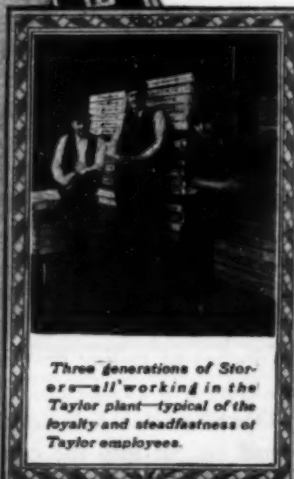
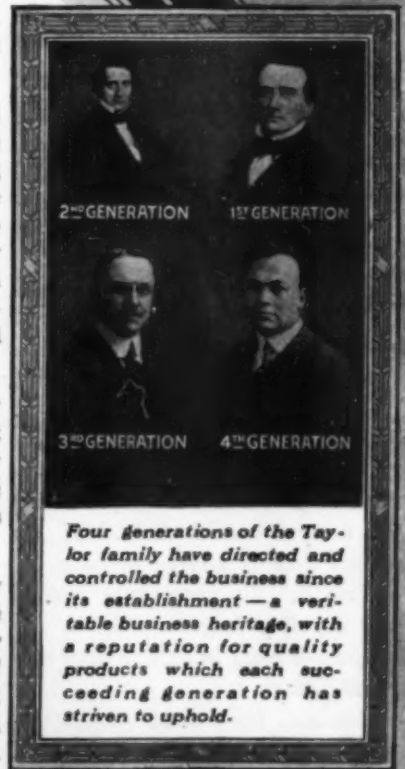
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basement pipe.

The sum of:

Glass (sq. ft.) (Note 4)  $\div 12$

Net Wall (sq. ft.) (Note 5)  $\div 60$

Cubic Contents  $\div 800$

$\times 6 =$  Area of Basement

Pipe (Note 10)

Section 3. Third Floor Rooms.

Divide square feet of glass by 12.

Divide square feet of net outside wall by 60.

Divide cubic contents by 800.

Add together the above and multiply by 5.

The result is the area of the basement pipe.

The sum of:

Glass (sq. ft.) (Note 4)  $\div 12$

Net Wall (sq. ft.) (Note 5)  $\div 60$

Cubic Contents  $\div 800$

$\times 5 =$  Area of Basement

Pipe (Note 10)

Method of determining size of wall stacks.

Section 4. First Floor Rooms.

Same as Section 1.

Section 5. Second Floor Rooms.

Deduct 30% from basement pipe area determined in Section 2.

Section 6. Third Floor Rooms.

Deduct 30% from basement pipe area determined in Section 3.

#### Explanatory Notes

Note 4. In obtaining glass surface use full casement opening. An outside door is figured as glass.

Note 5. To obtain net outside wall multiply height by width and deduct the glass in all windows and outside doors.

Note 6. For rooms having unusual exposure, ordinarily north, northeast and northwest, add 15% to pipe area. For east and west exposure, add 10%.

Note 7. For cold ceilings, add one-half net area of ceiling to net exposed wall (cold ceilings are those next to unfloored attics.)

Note 8. Use no warm air pipe less than 8 inches in diameter. If a basement warm air pipe figures greater area than any standard commercial size then the next larger size shall be used.

Note 9. It is understood in using the above values for determining basement warm air pipe areas, that these pipes should be run comparatively straight and that they should not be over 10 to 12 feet in length.

Sharp turns and long pipes should have extra capacity.

Note 10. These formulae are for 70° inside temperature with zero temperature outside. For a temperature of 10° below zero, add 10% to the capacity of each pipe.

Note 11. The value of 800 (used in cubic contents) is for an estimated air change of one room volume per hour. If it is desired to provide for 1½ room volume use the figure 600. If for 2 room volumes use the figure 400. "The factors 9, 6 and 5 in sections 1, 2 and 3, are calculated for a register air temperature of 175 degrees."

#### Transition Fittings and Stacks

Section 7. Transition from warm air pipes to stacks shall be made with a well designed elbow or boot and no stack shall be less than 70% of the warm air pipe area.

#### Method of Determining Size of Registers

Section 8. All registers shall have a free area at least equal to the calculated area of the basement pipe.

#### Method of Determining Size of Furnace

Section 9. Add together the actual warm air pipe areas in sq. in. as obtained in Sec. 1, 2 and 3, and select a furnace having a free area not less than the sum of all the warm air pipe areas.

### ARTICLE NO. 4

#### Installation

##### Location of Furnace

Section 1. The location of the furnace shall equalize the length of warm air runs as far as possible, yet give necessary preference to pipes supplying living rooms, dining rooms and main halls.

##### Foundation

Section 2. Furnace foundation of brick, cement, or other incombustible material must be provided. Said foundation to extend at least fifteen (15") inches at rear and sides of furnace casing and at least thirty-six (36") inches in front of furnace casing. Foundation to be level.

##### Setting or Assembling of Furnace

Section 3. (a) The base ring of the furnace shall be cemented to the foundation, making an air tight

joint. The furnace parts shall be assembled plumb and level, and in a workmanlike manner.

(b) All sections and joints shall be properly fitted. Joints requiring cement shall be well filled and all bolts shall be drawn up tightly.

#### Casings

Section 4. (a) Warm air furnaces shall be enclosed in metal casings or walls of brick, tile or concrete.

(b) Portable. Sheet metal casings including casing tops shall be made of galvanized sheets, not lighter than 26-U. S. Standard Gauge. They shall fit the castings and casing rings closely, so as to be dust tight, and shall be securely fastened to the front. The casings shall be lined from the upper casing ring down to a line on a level with the grate.

(c) When side collars are used the casing top must be of sufficient height so that the largest warm air pipe can be taken from side without ovaling. In no case shall a distance less than eight (8") inches be maintained between the top of any furnace and the top of casing or bonnet.

(d) Any furnace, the casing top of which shall come within sixteen (16") inches of a combustible floor, ceiling or joist, shall be protected by a metal shield, extending not less than eighteen (18") inches beyond the casing of said furnace. This shield shall be suspended at least two inches below wood work, allowing free air space between shield and woodwork. No furnace casing or top, coming nearer than six (6") inches of ceiling or joists shall be allowed in any case.

(e) Openings for side casing collars shall be cut into the casing top, so that the tops of all openings are on a level. Casing collars shall be fitted into place with a proper flange, or bead on the outside and drawn up on the inside, making a dust-tight joint. All collars shall be of same size as the warm air pipes to which they are to be connected.

(f) Brick set, cement or hollow tile casings shall be constructed as





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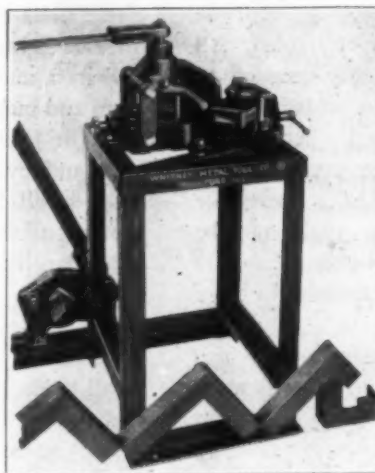
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follows: Walls shall be not less than eight (8") inches in thickness, and shall be constructed air tight. Rectangular casing shall be, with least inside dimensions, the same as that of the portable casing of a corresponding size of furnace. Walls shall be carried to the same height as the portable walls, allowing not less than eight (8") inches between the top of the furnace and the bottom of the top cover. After placing the collars for the warm air pipes, continue the masonry up even with the top of the collars, lay spacing rods of bar iron on edge or angle irons across the furnace top, cover these with sheet iron, cover the sheet iron with masonry and run the side walls four (4") inches above the masonry bed. A galvanized iron casing bonnet may be used on brick set furnaces.

Provision shall be made in the walls for a manhole to give ingress to heater.

#### Warm Air Pipes in Basement

Section 5. (a) All warm air pipes shall be made of bright tin not lighter than IC, or galvanized iron. Side seams shall be locked seams. All joints shall be either double seamed or lapped not less than one and one-quarter ( $1\frac{1}{4}$ ") inches and such joints shall be beaded and soldered or riveted. All pipes shall be properly secured to ceiling or joist. No solder or riveted joint is required where round pipe slips over the casing collar. Any pipe twelve (12") inches or greater in diameter shall not be made of material lighter than IX tin or No. 26 U. S. Standard Gauge galvanized iron.

*Note 12. It is recommended that all warm air pipes in the basement shall have an upward pitch of not less than one (1") inch per running foot.*

(b) No warm air pipe shall run within one (1") inch of any woodwork unless such woodwork is covered with asbestos paper and the paper covered with tin or iron.

(c) All warm air pipes in the basement shall be provided with dampers not more than two feet from the casing.

(d) Where warm air pipes pass through a masonry wall, a metal thimble shall be provided, having a diameter at least 1" greater than the pipe, and pipe supported in such a manner that the air space is uniform on all sides.

#### Wall Stacks

Section 6. (a) Single Stacks. All single wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin or galvanized iron and shall be covered with not less than one thickness of 12 lbs. per one hundred (100) square feet of asbestos paper. All studding and other woodwork facing said pipe shall be lined with metal and metal lath used in place of wood lath. An air space of not less than three-eighths ( $\frac{3}{8}$ ") of an inch shall be allowed on the two sides nearest the vertical studs. All such pipes shall be braced in a proper manner so as not to obstruct the flow of air, but to retain the full capacity throughout. All joints shall be locked and held in place by means of lugs, or straps. No joint shall depend wholly upon solder to make it tight. (b) Double Stacks. All double wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin, not lighter than IC, or galvanized iron, and shall be made double, from and including the boot or foot-piece in basement to the top of each and every stack and register head on all floors. There shall be continuous uniform air space of not less than five-sixteenths ( $\frac{5}{16}$ ") of an inch, which must be maintained between the outer and inner walls of all such pipes and fittings of all kinds, styles and descriptions; such pipes, heads, boots and other fittings to be of the styles, or equal to those accepted by the National Board of Fire Underwriters.

All pipes and fittings either single or double must be secured firmly in place by lugs or straps attached to the outer walls of stacks and fittings, and no nails shall be driven through these stacks or fittings at any point. No wall pipes or fittings shall be used which depend wholly

on soldered joints. The various members shall be so made that all joints are locked and soldered and the several members shall be attached to each other with slip joints, which are, for the purpose intended, air tight.

#### Registers

Section 7. (a) When baseboard or wall registers are used, they shall be properly and permanently attached to the stack head in such a manner that will prevent any leakage of air between the head and the register.

(b) Floor registers shall be provided either with register borders, or double register boxes of tin or galvanized iron with an air space of not less than five-sixteenths ( $\frac{5}{16}$ ") of an inch between inner and outer boxes.

(c) Registers for warm air and warm air pipes shall not be located in outside walls. The warm air registers in the various rooms shall be located in or near the inside walls in all cases.

#### Air Supply to Furnace

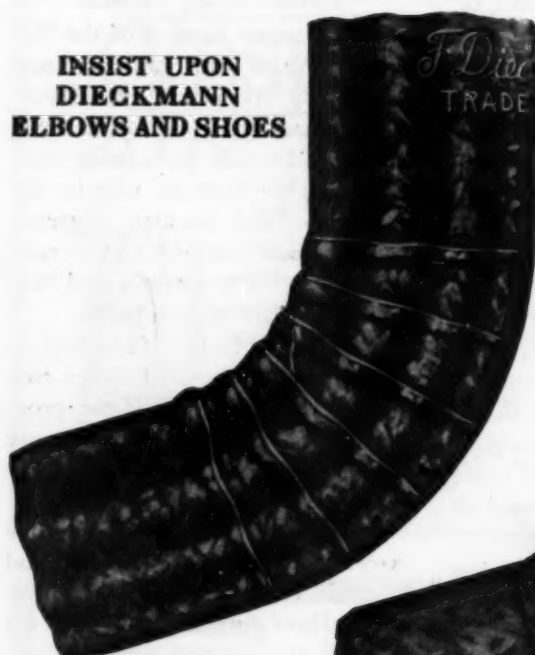
Section 8. (a) The air supply to furnace for warm air heating plants may be taken from outside or from within the building or may be taken partially from outside and partially from within. In no case, however, shall air be supplied to any furnace from any basement or furnace room.

(b) The cold air intake or return where air is taken from within the building shall have a net area throughout its entire length of not less than the combined net area of all warm air pipes leading from the furnace. This may be maintained in one or more ducts.

(c) When the cold air supply is taken wholly from the outside of the building the supply duct at its most contracted area must equal or exceed eighty (80%) per cent of the combined area of all warm air pipes leading from the furnace.

(d) Cold air ducts shall be constructed of metal, tile or other incombustible material having smooth inner surface and shall maintain a constant net area throughout their entire length and shall be made air

**INSIST UPON  
DIECKMANN  
ELBOWS AND SHOES**



*F. Dieckmann*  
TRADE MARK

TRADE MARK

**ALL JOBBERS HAVE  
THEM OR CAN GET  
THEM FOR YOU**



**The Ferdinand Dieckmann Co.** P. O. Station B,  
Cincinnati, Ohio



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Sheet Metal Ornaments  
and  
**STATUARY**

1252 So. Vandeventer Ave.  
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*The 13-Cylinder Ventilator  
Used in Every State  
in the Union.*

**SPECIFY ÆOLUS  
VENTILATORS**

## ÆOLUS FOR HOMES

The home should be properly ventilated—few of them are. Here is a sales opportunity often overlooked by the average Sheet Metal Worker, but one which offers a lucrative business to those who take advantage of it.

**Æolus-Dickinson Co.**

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3332-53 South Artesian Avenue  
CHICAGO  
Phone: Lafayette 1862-1863

## SPECO SOLID SAL AMMONIAC



Will not crumble--  
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Does not corrode  
tools--  
Outlasts "lump"  
5 to 1--  
Is easier to use--

A FREE SAMPLE will prove these facts to you--Just mention this advertisement.

**THE** biggest shops in the country use SPECO SOLID SAL AMMONIAC because it saves time and costs less--your shop should use SPECO for the same reasons.

Write today for circulars, catalog and prices. Sold by all leading jobbers.

**Special Chemicals Company**  
Waukegan, Illinois



tight. Where a boot or shoe is connected to the casing at the base, the opening shall not extend higher than a line on the level of the grate of the furnace. The width of the shoe shall be of proper measurement to make the area at least equal to that of the round or square pipe to which it is connected.

(e) Wherever the space between joists is used to convey cold air over head, the joists and all wooden surfaces between such joists shall be lined with metal and a sheet metal pan constructed to extend not less than six (6") inches below said joists. The connection from this pan to the boot or shoe shall be made of galvanized iron not lighter than No. 26 U. S. Standard Gauge, and shall have a transition collar, the top area of which shall be at least 10% greater than the area of the connecting pipe.

(d) The cold air face or faces shall be made of wood, or metal. When set in floors the top of same shall be flush with floor. Where cold air face is placed in a seat or side wall (whether furnished by owner, general contractor or furnace contractor) the open work of face must extend to within at least one (1") inch of the floor line.

The free area of cold air faces shall be at least 10% in excess of the free area of the duct or ducts to which they are connected.

*Note 13. The effective area of a vertical cold air face lies within twelve (12") inches of the floor line, hence, the capacity of any vertical cold air face shall be determined by multiplying the base line in inches by not to exceed twelve (12") inches in height and deducting for the grills or cross bars.*

#### Smoke Pipes

Section 9. (a) The smoke pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of either black or galvanized iron not lighter than No. 24 U. S. Standard gauge, and of the full size of the collar on the furnace throughout its entire length. It must have no other opening for attaching any fire place, stove, range, water heater, gas or

ventilating connection. It shall be lock seamed or riveted; all joints shall lap not less than one and one-half (1½") inches and it shall be rigidly secured. Cast iron smoke pipe may be used.

(b) Where the smoke pipe enters the flue, a thimble shall be cemented into the flue and the connections thereto made air tight. Should any smoke pipe come within eighteen (18") inches of any combustible material, such combustible material must be covered with asbestos paper and a metal shield so fastened that a two inch air space exists between this shield and the combustible material.

(c) No smoke pipe shall project through any external wall or window.

#### Pipeless or One Pipe Furnaces

Section 10. (a) When but one duplex grating is used for both warm air and cold air in a so-called pipeless furnace, the area of the cold air intake shall be at least equal to the area of the warm air outlet of the grating. Art. 4, Sec. 4, relative to casing shall not govern when this type of furnace is installed, but the following specification shall be followed: The inner and outer casing of this type of furnace may be made of either black or galvanized iron not lighter than No. 26 U. S. Standard Gauge. A uniform air space shall be maintained at all points between the inner and outer casing. In no case shall the top of the furnace be allowed closer than twelve (12") inches to any ceiling or joists above the furnace.

(b) Where joists are cut to accommodate this furnace, headers shall be put in and braced so as not to weaken the structure of the floor above the furnace.

(c) Article No. 3 for determining area of warm air pipe shall not govern in figuring a pipeless furnace.

(d) Where one warm air register face is used and separate face or faces for cold air supply are used, then Article No. 4, Sections 5 and 8 shall apply.

#### Furnace Rating Formula

At the recent meeting of the National Warm Air Heating and Ventilating Association the Standard Furnace Code Committee presented a formula for rating furnaces. This formula will be inserted in the Standard Furnace Code, section 9, article 3, at its next publishing. The formula and how to apply it are related below.

$$L=1.75 G[1+0.02 (R-20)]$$

in which L is the total leader area for the house, and G is the gross grate area, both expressed in square inches, and R equals heating surface divided by grate surface.

To apply this formula it will be necessary to have the value R, and this will be obtained as follows:

1. Have furnaces measured for heating surface and grate surface by reliable disinterested party.

2. Party to be elected by Advisory Committee plus Professor Willard.

3. Party to be trained by and report results of measurements to Professor Willard.

4. Party to be paid from general fund in hand of Society Treasurer.

5. Member firms to be charged for services of party making measurements at the rate of \$10.00 per day plus expenses.

6. Data, heating surface and grate surface, when OK'd by Research Staff to be given to the Company for use by said Company, and shall also be filed with the Research Staff.

7. Each furnace measured and OK'd to be properly labeled under the authority of the Association as follows:

National Warm Air Heating & Ventilating Association rating.

No. of furnace.....

Heating surface .....

Grate surface .....

8. Manufacturers, not member companies, will not be eligible to authorized measurement.

9. When furnaces are measured a list will be published by the Society and distributed with the Code.

10. This list will be revised from time to time as member companies are added.

## VESUVIUS BLOW TORCHES



For Gasoline

In pint or quart sizes  
With quickly removable soldering iron  
hooks.

Vesuvius Blow Torches are made of brass or non-corrosive oxydized terne plate. The latter is particularly recommended for hard usage.

Write for prices and illustrated circular today

**QUICK MEAL STOVE COMPANY**

Div. American Stove Company

825 Chouteau Ave.

St. Louis, Mo.



*Torrid*

### "Torrid" Tinner's Furnaces

have stood the test of time. Imitations come, go, are changed but "Torrid" standard is unalterable and price always right.

**GEO. W. DIENER MFG. CO.**

CHICAGO, ILL.  
Makers of fine Blow Torches and Fire Pots.



### This Is the Fire Pot You Need WHY?

**B** It always burns with a blue flame which produces **THE HEAT**.  
**A** 3 1/4 pound copper will heat and melt solder in **TWO MINUTES**.  
**E** The pot will generate and operate outdoors in **ANY KIND OF WEATHER**.  
**C** It will heat irons as fast as they are cooled. No time wasted.  
**U** Less than a gallon of gasoline is used in a day.  
**S** It is smokeless and odorless while in operation.  
**E** It can be turned down low when not in use.

Order yours now. Only \$11.00 f. o. b. factory. Two per cent discount when cash accompanies the order.

No. 25 Double Blast  
Gasoline Fire Pot

**DOUBLE BLAST MFG. CO., Inc.**  
Commonwealth Ave. North Chicago, Ill.

## 50-INCH FORMING ROLL

This Forming Roll is built in all standard sizes, with our Patented Opening Device by means of which it is opened and closed in a few seconds.

We build a complete line of Shears and Punches, all sizes, for hand or belt power.

Write for Catalog "R"  
**BERTSON & CO., Cambridge City, Ind.**



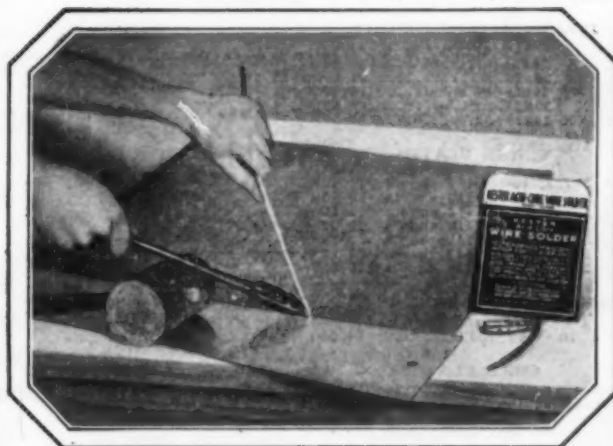
## KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"



## Flows Under the Seams

**I**T IS IMPORTANT in Sheet Metal work to have well soldered joints. A difficult job may be well handled to the finish—but if the soldering is weak, the work falls flat.

By using Kester Solder, you know your job will last. Inside of this hollow wire solder are tiny pockets full of scientifically prepared flux. This flows to the job just before the solder melts, and you guide it right where you want it.

This eliminates the old acid pot and saves one-third of the time together with labor and material. Kester figures a neat saving for the steady user.



Kester Acid-Core Solder for general use in 1 lb. cartons; 1, 5 and 10 lb. spools. Small package Acid-Core Solder, Kester Metal Mender for autoist, householder, etc. For delicate radio and electrical work—Kester Rosin-Core Solder.

Manufactured by the  
**CHICAGO SOLDER COMPANY**  
4241 Wrightwood Ave.  
CHICAGO, U. S. A.

# Chicago Warehouse Metal and Furnace Supply Price.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

## METALS

### PIG IRON

Chicago Fdy., No. 2.....	\$21 00
Southern Fdy., No. 2.....	25 01
Lake Superior Charcoal.....	27 04
Malleable.....	21 00

### FIRST QUALITY BRIGHT TIN PLATES

IC 20x28, 112 sheets.....	\$25 10
IX 20x28, 112 sheets.....	29 60
IXX 20x28, 56 sheets.....	16 20
IXXX 20x28.....	17 65
IXXXX 20x28.....	18 95

### TERNE PLATES

	Per Box
IC 20x28, 40-lb. 112 sheets	\$27 90
IX 20x28, 40-lb. 112 sheets	30 90
IC 20x28, 25-lb. 112 sheets	22 20
IX 20x28, 25-lb. 112 sheets	25 20
IC 20x28, 20-lb. 112 sheets	20 25
IX 20x28, 20-lb. 112 sheets	23 00
IC 20x28, 15-lb. 112 sheets	16 65

### "ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including	
1/4 in.—100 lbs.....	\$4 65

### COKE PLATES

Cokes, 80 lbs., base, 20x28.	\$13 60
Cokes, 90 lbs., base, 20x28.	13 50
Cokes, 100 lbs., base, 20x28.	14 00
Cokes, 107 lbs., base, 1c	
20x28.....	14 30
Cokes, 135 lbs., base IX	
20x28.....	16 40
Cokes, 155 lbs., base, 56	
sheets.....	9 20
Cokes, 175 lbs., base, 56	
sheets.....	10 05
Cokes, 195 lbs., base, 56	
sheets.....	10 90

### BLUE ANNEALED SHEETS

Base 10 ga.....per 100 lbs.	\$2 80
"Armco" 10 ga.....per 100 lbs.	4 00

### ONE PASS COLD ROLLED BLACK

No. 18-20.....per 100 lbs.	\$3 75
No. 22.....per 100 lbs.	3 90
No. 24.....per 100 lbs.	3 95
No. 26.....per 100 lbs.	4 05
No. 27.....per 100 lbs.	4 10
No. 28.....per 100 lbs.	4 20
No. 29.....per 100 lbs.	4 35
No. 30.....per 100 lbs.	4 45

### "ARMCO" GALVANIZED

"Armco" 24.....per 100 lbs.	\$6 25
-----------------------------	--------

### GALVANIZED

No. 16.....per 100 lbs.	\$4 30
No. 18.....per 100 lbs.	4 45
No. 20.....per 100 lbs.	4 60
No. 22.....per 100 lbs.	4 65
No. 24.....per 100 lbs.	4 80
No. 26.....per 100 lbs.	5 05
No. 27.....per 100 lbs.	5 15
No. 28.....per 100 lbs.	5 30
No. 30.....per 100 lbs.	5 70

### BAR SOLDER

Warranted 50-50.....per 100 lbs.	43 25
Commercial 45-55.....per 100 lbs.	40 25
Plumbers.....per 100 lbs.	37 25

### ZINC

In Slabs.....	\$8 50
---------------	--------

### SHEET ZINC

Cash Lots (600 lbs.).....	\$13 50
Sheet Lots.....	14 50

### BRASS

Sheets, Chicago base.....	18% c
Mill base.....	15% c
Tubing, brass base.....	27% c
Wire, base.....	19% c
Rods, base.....	16% c

### COPPER

Sheets, Chicago base.....	22% c
Mill Base.....	21% c
Tubing, seamless base.....	25% c
Wire, No. 9 B & S Ga.....	18% c
Wire, No. 10 B & S Ga.....	19% c
Wire, No. 11 B & S Ga.....	19% c
Wire, No. 8 B & S Ga. and heavier.....	18% c

## HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

### LEAD

American Pig.....	\$8 70
Bar.....	9 70

### Sheet

Full Coils.....per 100 lbs.	14 00
Cut Coils.....per 100 lbs.	14 25

### TIN

Pig tin.....per 100 lbs.	77 50
Bar tin.....per 100 lbs.	78 50

### ASBESTOS

Paper up to 1/16.....	6c per lb.
Roll board.....	6 1/2c per lb.
Mill board 3/32 to 1/4.....	6c per lb.
Corrugated Paper (250 sq. ft. to roll).....	\$6.00 per roll

### BRUSHES

Hot Air Pipe Cleaning Bristle, with handle, each.	\$0 85
---	--------

### Flue Cleaning

Steel only, each.....	1 25
-----------------------	------

### BURRS

Coppers Burrs only.....	40-2 1/2%
-------------------------	-----------

### CEMENT, FURNACE

American Seal, 5-lb. cans, net	\$ 40
American Seal, 10-lb. cans, net	80
American Seal, 25-lb. cans, net	2 00
Pecora.....per 100 lbs.	7 51

### CHIMNEY TOPS

Iwan's Complete Rev. & Vent.....	30%
Iwan's Iron Mountain only.....	35%
Standard.....	30 to 40%

### CLINKER TONGS

Front Rank, each.....	\$0 75
Per doz.....	8 40

### CLIPS

Damper Acme, with all tail pieces, per doz.....	\$1 25
Non Rivet tail pieces, per doz.....	25

### COPPERS—Soldering

#### Pointed Roofing

3 lb. and heavier.....per lb.	40c
2 1/2 lb.....per lb.	45c
2 lb.....per lb.	48c
1 1/2 lb.....per lb.	55c
1 lb.....per lb.	60c

### CORNICE BRAKES

Chicago Steel Bending Nos. 1 to 6B.....	Net
---	-----

### CUT-OFFS

Kuehn's Korrekt Kutoffs: Galv., plain, round or cor. rd. standard gauge.....	40%
26 gauge.....	30%

### DAMPERS

"Yankee" Hot Air 7 inch, each 20c, doz.....	\$1 75
8 inch, each 25c, doz.....	2 40
9 inch, each 30c, doz.....	2 75
10 inch, each 32c, doz.....	3 00

### Smoke Pipe

7 inch, each.....	\$0 25
8 inch, each.....	40
9 inch, each.....	50
10 inch, each.....	60
12 inch, each.....	90

### Reversible Check

8 inch, each.....	\$1 50
9 inch, each.....	1 70

## DIGGERS

Iwan's Split Handle (Eureka) 4-ft. Handle...per doz.	\$14 00
7-ft. Handle...per doz.	26 00
Iwan's Hercules pattern, per doz.....	14 90

## EAVES TROUGH

Galv. Crimpedge, crated. 75 & 5%	
----------------------------------	--

## ELBOWS

### Conductor Pipe Milcor

Galv., plain or corrugated, round flat Crimp.	
28 Gauge.....	60%
26 Gauge.....	45%
24 Gauge.....	15%

### Square Corrugated

No. 28 Gauge.....	50%
26 Gauge.....	35%

### Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested.....	70 & 5%
Nested solid.....	70 & 5%

## ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 gauge.	Doz.
5-inch.....	\$1 15
6-inch.....	1 25
7-inch.....	1 75

### Special Corrugated

6-inch.....	\$1 00
7-inch.....	1 60

### Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue.	
5-inch.....	\$1 65
6-inch.....	1 75
7-inch.....	2 40

## WOOD FACES—50% off list.

## FENCE

726-6-12 1/4% (100 rods).....	\$28 68
1948-6-14 1/4% (100 rods).....	43 62

## FILES AND RASPS

Heller's (American).....	50-10%
American.....	60-10%
Arcade.....	50%
Black Diamond.....	40-10-5%
Eagle.....	50%
Great Western.....	50%
Kearney & Foot.....	50%
McClellan.....	50%
Nicholson.....	50%
Simonds.....	60%

## FIRE POTS

### Otto Bernz Co.

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas.....	65%
West of above boundary.....	61%

### Clayton & Lambert's

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas.....	65%
West of above boundary.....	48%

Geo. W. Diener Mfg. Co. No. 62 Gasolene Torch, 1 qt.....	\$ 5 55
No. 6250, Kerosene, or Gasolene Torch, 1 qt.....	7 50
No. 10 Tinner's Furn. Square tank, 1 gal.....	12 60
No. 15 Tinner's Furn. Round tank, 1 gal.....	12 00
No. 21 Gas Soldering Furnace.....	3 60
No. 110 Automatic Gas Soldering Furnace.....	10 50

Double Blast Mfg. Co. Gasolene, Nos. 25 and 26.....	60%
---	-----

Quick Meal Stove Co. Vesuvius, P. O. B. St. Louis (Extra Dist. for large quantities).....	30%
---	-----

Chas. A. Hones, Inc. Buzzer No. 1.....	\$ 9 00
Buzzer No. 2.....	12 00
Buzzer No. 22.....	12 50
Buzzer No. 42.....	15 00
Buzzer No. 43.....	19 00

## GALVANIZED WARE

Pails (Galv. after made), 10-qt.....	\$2 12
Tubs (Galv. after made), No. 1.....	6 00
No. 2.....	6 50

## GLASS

Single Strength, A, 25-in. brackets.....	85%
Single Strength, A, 34 to 40-in. bracket.....	82%
Single Strength A, all other brackets.....	81%
Double Strength A, all sizes.....	82%

## HANGERS

Conductor Pipe Milcor Perfection Wire.....	35%
Eaves Trough Milcor Eclipse Wire.....	15%
Milcor Triplex Wire.....	10%
Milcor Milwaukee Extension 10% Milcor Steel (galv. after forming) List plus.....	12 1/2%
Milcor Selflock E. T. Wire, List plus.....	50%

## HOOKS

Box V. & B. No. 1, each.....	\$0 26
Conductor Milcor "Direct Drive" Wrought Iron for wood or brick.....	15%
Hay V. & B. No. 1, each.....	\$0 26

## HUMIDIFIERS

"Front-Rank" Automatic In single lots.....	50%
In lots of 10 or more.....	50-5%
In lots of 25 or more.....	50-10%
Vapor pans, etc., each.....	50%

## LIFTERS

Stove Cover Coppered.....per gro.	\$6 60
Alaska.....per gro.	4 75

## MALLETS

Tinners Hickory.....per doz.	\$2 25
------------------------------	--------

## MITRES

Galvanized steel mitres, and caps, end pieces, outlets.....	30%
---	-----

Milcor Galv. one piece stamped.....	40%
-------------------------------------	-----

## NAILS

Cut Steel.....	\$4 25
Cut Iron.....	4 35

Wire Common.....	3 05
Cement Coated.....	3 05

(Continued on page 302)





"Can you lay out work like that!" asked one employer. That's the kind of men I hire and give steady work. My men help me and I help them in this business."

## HAVE YOU ABILITY WORTH \$3,000 A YEAR?

If you want to get into the Bigger Pay Class of Jobs we can qualify you for such Positions. All big Concerns now say, "the Position pays (so much), qualify for it and you will get the money." Thus:

FOREMANSHIP pays	\$2,500 to \$ 3,600 a year
ESTIMATORS	\$2,800 to \$ 3,800 a year
HEATING ENGINEERS	\$3,000 to \$25,000 a year
SUPERINTENDENTS	\$4,000 to \$15,000 a year
SALES ENGINEERS	\$3,500 to \$12,000 a year
GENERAL MANAGERS	\$4,500 to \$30,000 a year
PRESIDENTS, range	\$6,000 to \$50,000 a year

JOURNEYMEN and SMALL SHOP OWNERS are lucky to average \$1,800 a year income, because they don't train themselves. Let us Coach YOU to be a WINNER.

**OUR COACHING QUALIFIES YOU FOR AN ENGINEERING DEGREE.** We teach you in your Own Home, Personal, Clear, Direct. Write today, while you think about it. Select your Course.

- ☐ SHEET METAL DESIGN AND PATTERN DRAFTING  
☐ SPECIAL WARM AIR FURNACE HEATING

- ☐ SHEET METAL CONTRACTING AND ESTIMATING  
☐ FAN HEATING VENTILATING ENGINEERING

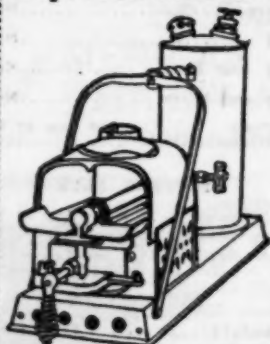
## THE ST. LOUIS TECHNICAL INSTITUTE

4543 Clayton Avenue

O. W. KOTHE, Prin.

ST. LOUIS, MO.

### Improved Models of Soldering Furnaces



Have you seen the improved models? The greatest line of Soldering Furnaces today on the market. They should be. There is more experience behind them. Forty-eight years of it! The Gems were popular before the majority of present day furnaces were heard of. It is the oldest, the recognized standard Soldering Furnace today.

Look these models over. Each leads its class. Line them up and take your choice.

Do you want a Catalog?

**BURGESS SOLDERING FURNACE CO.**

Department A COLUMBUS, O.

Improved No. 3 Gem with Pump

### CHICAGO STEEL CORNICE BRAKES

STANDARD OF THE WORLD



THE BEST BRAKE FOR ALL PURPOSES: Most Durable, Easiest Operated, Low in Price; Made in All Lengths and to Bend All Gauges of Metal. Over 23,000 in use.

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### EVERYTHING USED IN SHEET METAL WORK

## QUICK SHIPMENT FROM CLEVELAND WAREHOUSE

### Charcoal Bright Tin Plate

Up to 4A Grade  
Up to 4X Gauge

### Imported Dairy Tin Sheets

Up to D4x—48x96 Size

### Monel Metal

No. 18 to 24 Gauge  
Hot Rolled and Cold Rolled Polished

### Osborn's Lead Cote Sheets

No. 18 to 28 Gauge

**The J. M. & L. A. OSBORN CO.**  
CLEVELAND

Buffalo Warehouse, 64-68 Rapin Street

# ADVERTISERS' INDEX

The dash (—) indicates that the advertisement runs on a regular schedule but does not appear in this issue.

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### NETTING, POULTRY

Galvanized before weav-  
ing .....57½-58  
Galvanized after weaving.52½-53

### PASTE

Asbestos Dry Paste:  
200-lb. barrel .....\$16 00  
100-lb. barrel .....8 75  
35-lb. pail .....3 50  
10-lb. bag .....1 10  
5-lb. bag .....60  
2½-lb. cartons .....35

### PIPE

Conductor  
Cor. Rd., Plain Rd. or Sq.  
"Interlock" Galvanized  
Crated and nested (all  
gauges) .....75-2½%  
Crated and not nested  
(all gauges) .....70-15%  
"Milcor" "Titlelock" Uniform  
Blue Stove  
28 gauge, 5 inch U. C.  
nested .....11 00  
28 gauge, 6 inch U. C.  
nested .....12 00  
28 gauge, 7 inch U. C.  
nested .....14 00  
30 gauge, 5 inch U. C.  
nested .....10 00  
30 gauge, 6 inch U. C.  
nested .....10 50  
30 gauge, 7 inch U. C.  
nested .....12 00

T-Joint Made up  
6-inch, 28 ga. ....Per 100 \$2 50

Furnace Pipe  
Double Wall Pipe and  
Pipe Fittings .....40%  
Single Wall Pipe, Round  
Iron Pipe Galvanized .....40%  
Galvanized and Black  
Fittings .....40%  
Milcor Galvanized  
Pipe and Fittings .....40%  
Lead  
Per 100 lbs. ....\$12 50

**POKERS, STOVE**  
Wr't Steel, str't or bent.  
.....per doz. \$8 75  
Nickel Plated, coil handles,  
.....per doz. 1 10

**POKERS, FURNACE**  
Each .....\$0 50

**PULLEYS**  
Furnace Tackle. ....per doz. \$8 00  
.....per gro. 6 00  
Furnace Screw (enameled)  
.....per doz. 75

**Ventilating Register**  
Per gross .....9 00  
Small, per pair. ....30  
Large, per pair. ....50

**PUTTY**  
Commercial Putty, 100-lb.  
Kits .....\$3 40

**QUADRANTS**  
Malleable Iron Damper ....10%

**REDUCERS—Oval Stove Pipe**  
Per Doz.  
7-6, 1 doz. in carton. ....\$2 00

**BASEBOARD REGISTERS**  
Excelsior .....50%

**FLOOR REGISTERS AND BORDERS**  
Cast Iron .....30%  
Steel and Semi-Steel. ....40%  
In lots less than 50. ....33½%  
Baseboard .....40%  
In lots less than 50. ....33½%  
Adjustable Ceiling  
Ventilators .....40%

**Register Faces—Cast and Steel**  
Japanned, Bronzed and  
Plated, 1x6 to 14x14 .....40%  
In lots less than 50. ....33½%  
Large Register Faces—Cast.  
14x14 to 28x14. ....50%  
Large Register Faces—Steel.  
14x14 to 28x14. ....55%  
In lots less than 50. ....50%

**Milcor RIDGE ROLL**  
Galv. Plain Ridge Roll,  
b'd'd .....75-10-5%  
Galv. Plain Ridge Roll,  
crated .....75-10%  
Globe Finials for Ridge Roll. ....50%

### ROOFING

Per Square  
Best grade, slate surf. prep'd \$3 20  
Best talc surfaced. ....2 65  
Medium talc surfaced. ....2 00  
Light talc surfaced. ....1 20  
Red Rosin Sheeting, per ton 57 00

### SCREWS

Sheet Metal  
7, ¼x¼, per gross. ....\$8 52  
No. 10, ¼x3/16, per gross. 88  
No. 14, ¼x¼, per gross. ....80

### SHEARS, TINNERS' & MACHINISTS'

Viking .....\$22 00

### Lennox Throatless

No. 18 .....35%  
Shear blades .....10%  
(f. e. b. Marshalltown, Iowa.)

### SHIELDS, REGISTER

No. 1 "Gem" floor .....\$12 00 doz.  
No. 2 "Gem" wall .....6 00 doz.

### SHOES

Milcor  
Galv. 28 Gauge, Plain or  
corg. round flat crimp. ....60%  
28 gauge round flat crimp. ....45%  
24 gauge round flat crimp. ....15%

### SNIPS, TINNERS'

Clover Leaf .....40 & 10%  
National .....40 & 10%  
Star .....50%  
Milcor .....Net

### SQUARES

Steel and Iron. ....Net  
(Add for bluing, \$3 per doz. net.)

Mitre .....Net

Try .....Net

Try and Bevel. ....Net

Try and Mitre. ....Net

Fox's .....per doz. \$8 00  
Winterbottom's .....10%

### STOPPERS, FLUE

Common .....per doz. \$1 10  
Gem, No. 1. ....per doz. 1 10  
Gem, flat, No. 3. ....per doz. 1 00

### VENTILATORS

Standard .....30 to 40"

### WIRE

Plain annealed wire, No. 8,  
per 100 lbs. ....\$3 05  
Galvanized barb wire, per  
100 lbs. ....2 90  
Wire cloth—Black painted,  
12-mesh, per 100 sq. ft. ....1 65  
Cattle Wire—galvanized  
catch weight steel, per  
100 lbs. ....2 75  
Galvanized Hog Wire, 20 red  
spool, per spool. ....2 25  
Galvanized plain wire, No. 9,  
per 100 lbs. ....2 50  
Stove Pipe, per stone. ....1 10

### WRINGERS

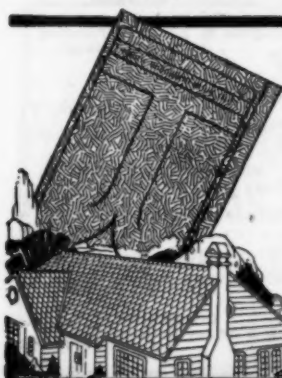
No. 750, Guarantee each \$5 40  
No. 770, Bicycle each 4 05  
No. 670, Domestic each 4 05  
No. 110, Brighton each 4 00  
No. 750, Guarantee each 5 40  
No. 740, Bicycle each 4 05  
No. 22, Pioneer each 2 05  
No. 1, Superb each 2 00

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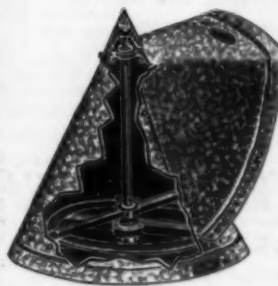
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- Brakes—Cornice.**  
Dreis & Krump Mfg. Co., Chicago, Ill.
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- Cleaners—Section.**  
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Lupton's Sons Co., David, Philadelphia, Pa.  
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Dieckmann Co., Ferdinand, Cincinnati, Ohio  
Double-Duty Mfg. Co., Aurora, Ill.  
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Lalanc & Grosjean Mfg. Co., Chicago, Ill.
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American Wood Register Co., Plymouth, Ind.  
Eaglesfield Ventilator Co., Indianapolis, Ind.  
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McClure Builders Supply Co., East Palestine, Ohio
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A. H. Robinson Company, Cleveland, Ohio  
Sturtevant Co., B. F., Boston, Mass.  
Warm Air Furnace Fan Co., The Cleveland, Ohio
- Furnace Rings.**  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Walworth Run Fdy. Co., Cleveland, Ohio
- Furnaces—Warm Air.**  
American Furnace Co., St. Louis, Mo.  
American Foundry & Furnace Co., Bloomington, Ill.  
Brillion Iron Works, Brillion, Wis.  
Carr Supply Co., Chicago, Ill.  
Chicago Furnace Supply Co., Chicago, Ill.  
Cleveland Co-operative Stove Co., Cleveland, Ohio  
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Meyer Furnace Co., The Peoria, Ill.  
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Peninsular Stove Co., Detroit, Mich.  
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Friedley-Voshardt Co., Chicago, Ill.  
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- Milwaukee Corrugating Co., Milwaukee, Wis.**
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Pecora Paint Co., Philadelphia, Pa.
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Quincy Pattern Co., Quincy, Ill.  
Vedder Pattern Works, Troy, N. Y.
- Pipe and Fittings—Furnace.**  
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Chicago Furnace Supply Co., Chicago, Ill.  
Dunning, Inc., E. C., Milwaukee, Wis.  
Excelsior Steel Furnace Co., Chicago, Ill.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Johnson Co., Inc., Chas., Peoria, Ill.  
Lamneck Co., W. E., Columbus, Ohio  
Meyer & Bro. Co., F., Peoria, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Mueller Furnace Co., L. J., Milwaukee, Wis.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Robinson Furnace Co., Chicago, Ill.  
Standard Furnace & Supply Co., Omaha, Neb.
- Pipe and Fittings—Stove.**  
Excelsior Steel Furnace Co., Chicago, Ill.  
Meyer & Bro. Co., F., Peoria, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Pipe—Conductor.**  
Berger Bros. Co., Philadelphia, Pa.  
Clark-Smith Hdw. Co., Peoria, Ill.  
Dieckmann Co., Ferdinand, Cincinnati, Ohio  
Friedley-Voshardt Co., Chicago, Ill.  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
New Jersey Zinc Sales Co., The New York, N. Y.  
Wheeling Corrugating Co., Wheeling, W. Va.

# WIRE

electrical,  
rope, barb-  
ed, plain,  
nails (bright

and coated), tacks, spikes, bale ties, hoops, springs, netting, wire fences, steel posts, steel gates, trolley wire, rail bonds, flat wire, cold rolled strip steel, piano wire, round and odd-shape wire, screw stock, concrete reinforcement. Aerial tramways.

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## COES WRENCH

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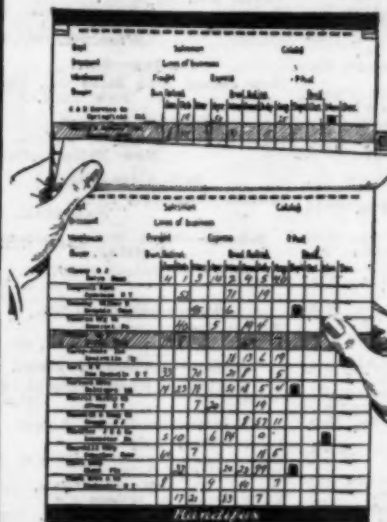
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- Posts—Steel Fence.**  
American Steel & Wire Co., Chicago, Ill.
- Punches.**  
Bertsch & Co., Cambridge City, Ind.  
Parker-Kalon Corp., New York, N. Y.  
Peck, Stow & Wilcox Co., Southington, Conn.  
Whitney Mfg. Co., W. A., Rockford, Ill.  
Whitney Metal Tool Co., Rockford, Ill.
- Punches—Combination Bench and Hand.**  
Parker-Kalon Corp., New York, N. Y.  
Whitney Metal Tool Co., Rockford, Ill.  
Whitney Mfg. Co., W. A., Rockford, Ill.
- Punches—Hand.**  
Whitney Metal Tool Co., Rockford, Ill.  
Whitney Mfg. Co., W. A., Rockford, Ill.
- Putty—Stove.**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.  
Pecora Paint Co., Philadelphia, Pa.
- Quadrants—Damper.**  
Parker-Kalon Corp., New York, N. Y.
- Radiator Cabinets.**  
Tayco Register Shield Co., Menasha, Wis.  
Tuttle & Bailey Mfg. Co., Chicago, Ill.
- Range—Combination Gas & Coal Quick Meal Stove Co., St. Louis, Mo.  
Thatcher Co., Newark, N. J.**
- Range—Gas.**  
Quick Meal Stove Co., St. Louis, Mo.
- Registers—Warm Air.**  
American Wood Register Co., Plymouth, Ind.  
Auer Register Co., Cleveland, O.  
Carr Supply Co., Chicago, Ill.  
Chicago Furnace Supply Co., Chicago, Ill.  
Eaglesfield Ventilator Co., Indianapolis, Ind.  
Excelster Steel Furnace Co., Chicago, Ill.  
Hart & Cooley Co., New Britain, Conn.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Register & Mfg. Co., Cleveland, Ohio  
Johnson Co., Inc., Peoria, Ill.  
Lamneck & Co., W. E., Columbus, Ohio  
Majestic Co., The, Huntington, Ind.  
Meyer & Bro. Co., F., Peoria, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Mueller Furnace Co., L. J., Milwaukee, Wis.  
Quick Furnace & Supply Co., Des Moines, Ia.  
Robinson Furnace Co., Chicago, Ill.  
Rock Island Register Co., Rock Island, Ill.  
Standard Furnace & Supply Co., Omaha, Neb.  
Stearns Register Co., Detroit, Mich.  
Symonds Register Co., St. Louis, Mo.  
Tuttle & Bailey Mfg. Co., Chicago, Ill.  
United States Register Co., Battle Creek, Mich.  
Walworth Run Fdy. Co., Cleveland, Ohio  
Waterloo Register Co., Waterloo, Iowa
- Registers—Wood.**  
American Wood Register Co., Plymouth, Ind.  
Auer Register Co., Cleveland, O.  
Chicago Furnace Supply Co., Chicago, Ill.  
Eaglesfield Ventilator Co., Indianapolis, Ind.  
Marsh Lumber Co., Dover, Ohio  
McClure Builders Supply Co., East Palestine, Ohio
- Repairs—Stove and Furnace.**  
Hessler Co., H. E., Syracuse, N. Y.  
Niehaus Furnace Repair Co., Cleveland, Cincinnati, O.  
Northwestern Stove Repair Co., Chicago, Ill.
- Ridging.**  
American Rolling Mill Co., Middletown, Ohio  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Rivets—Stove.**  
The Kirk-Latty Co., Cleveland, Ohio  
Lamson & Sessions Co., Cleveland, Ohio
- Roasters.**  
Lalanc & Grosjean Mfg. Co., Chicago, Ill.
- Rods—Stove.**  
The Kirk-Latty Co., Cleveland, Ohio  
Lamson & Sessions Co., Cleveland, Ohio
- Rolls—Forming.**  
Bertsch & Co., Cambridge City, Ind.
- Roofing Cement.**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.  
Pecora Paint Co., Philadelphia, Pa.
- Roof—Flashing.**  
Hessler Co., H. E., Syracuse, N. Y.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Roofing—Iron and Steel.**  
American Rolling Mill Co., Middletown, Ohio  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Friedley-Voshardt Co., Chicago, Ill.  
Inland Steel Co., Chicago, Ill.  
Merchant & Evans Co., Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Wheeling Corrugating Co., Wheeling, W. Va.
- Roofing—Tin.**  
Taylor Co., N. & G., Philadelphia, Pa.  
Wheeling Corrugating Co., Wheeling, W. Va.
- Roofing—Zinc.**  
New Jersey Zinc Sales Co., The, New York, N. Y.
- Rubbish Burners.**  
Hart & Cooley Co., New Britain, Conn.
- Salt—Ammoniac.**  
Special Chemicals Co., Waukegan, Ill.
- Schools—Sheet Metal Pattern Drafting.**  
St. Louis Technical Institute, St. Louis, Mo.
- Screws—Sheet Metal.**  
Parker-Kalon Corp., New York, N. Y.
- Screens—Perforated Metal.**  
Harrington & King Perforating Co., Chicago
- Shears—Hand and Power.**  
Double-Duty Mfg. Co., Aurora, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Peck, Stow & Wilcox Co., Southington, Conn.  
Unishear Co., The, New York  
Viking Shear Co., Erie, Pa.
- Sheets—Black and Galvanized.**  
American Rolling Mill Co., Middletown, Ohio  
Davis Co., Inc., C. S., Chicago, Ill.  
Inland Steel Co., Chicago, Ill.  
Merchant & Evans Co., Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Taylor Co., N. & G., Philadelphia, Pa.  
Wheeling Corrugating Co., Wheeling, W. Va.
- Sheets—Iron.**  
American Rolling Mill Co., Middletown, Ohio  
Merchant & Evans Co., Philadelphia, Pa.
- Sheets—Tin.**  
Davis Co., Inc., C. S., Chicago, Ill.  
Merchant & Evans Co., Philadelphia, Pa.  
Taylor Co., N. & G., Philadelphia, Pa.
- Sheets—Zinc.**  
New Jersey Zinc Sales Co., The, New York, N. Y.
- Shields—Register.**  
Beh & Co., New York, N. Y.  
Tayco Register Shield Co., Menasha, Wis.
- Shingles and Tiles—Metal.**  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Wheeling Corrugating Co., Wheeling, W. Va.
- Shingles—Asphalt.**  
Sall Mountain Co., Chicago, Ill.
- Shingles—Zinc.**  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Sifters—Ash.**  
Diener Mfg. Co., G. W., Chicago, Ill.
- Sky Lights.**  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Smoke Pipe—Cast Iron.**  
Waterloo Register Co., Waterloo, Iowa
- Snips.**  
Peck, Stow & Wilcox Co., Southington, Conn.
- Solder.**  
Chicago Solder Co., Chicago, Ill.  
Double-Duty Elbow Co., Aurora, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Solder—Aluminum.**  
Ziener Aluminum Solder Co., Rockford, Ill.
- Soldering Furnaces.**  
Berns Co., Otto, Newark, N. J.  
Burgess Soldering Furnace Co., Columbus, Ohio  
Clayton & Lambert Mfg. Co., Detroit, Mich.  
Diener Mfg. Co., G. W., Chicago, Ill.  
Double Blast Mfg. Co., North Chicago, Ill.  
Quick Meal Stove Co., St. Louis, Mo.
- Soldering Supplies.**  
Double-Duty Elbow Co., Aurora, Ill.  
Special Chemicals Co., Waukegan, Ill.
- Specialties—Hardware.**  
Diener Mfg. Co., G. W., Chicago, Ill.  
Hessler Co., H. E., Syracuse, N. Y.
- Stars—Hard Iron Cleaning.**  
Fanner Mfg. Co., Cleveland, Ohio
- Statuary.**  
Friedley-Voshardt Co., Chicago, Ill.  
Gerock Bros. Mfg. Co., St. Louis, Mo.
- Stampings—Metal.**  
American Tube & Stamping Co., Bridgeport, Conn.  
Dunning, Inc., E. C., Milwaukee, Wis.  
Stearns Register Co., Detroit, Mich.
- Stove Pipe Reducers.**  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Stoves—Camp.**  
Quick Meal Stove Co., St. Louis, Mo.
- Stoves—Gasoline and Oil.**  
Quick Meal Stove Co., St. Louis, Mo.
- Stoves and Ranges.**  
Cleveland Co-operative Stove Co., Cleveland, Ohio  
Oakland Foundry Co., Belleville, Ill.  
Peninsular Stove Co., Detroit, Mich.  
Quick Meal Stove Co., St. Louis, Mo.  
Thatcher Co., Newark, N. J.
- Tacks, Staples, Spikes.**  
American Steel & Wire Co., Chicago, Ill.
- Tile Cement—Elastic.**  
Pecora Paint Co., Philadelphia, Pa.
- Triplate.**  
Davis Co., Inc., C. S., Chicago, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Taylor Co., N. & G., Philadelphia, Pa.
- Tools—Tinsmith's.**  
Bertsch & Co., Cambridge City, Ind.  
Chicago Elbow Machine Co., Oak Park, Ill.  
Double-Duty Mfg. Co., Aurora, Ill.  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Peck, Stow & Wilcox Co., Southington, Conn.  
Unishear Co., The, New York, N. Y.  
Viking Shear Co., Erie, Pa.  
Whitney Mfg. Co., W. A., Rockford, Ill.  
Whitney Metal Tool Co., Rockford, Ill.
- Torches.**  
Berns Co., Otto, Newark, N. J.  
Burgess Soldering Furnace Co., Columbus, Ohio  
Clayton & Lambert Mfg. Co., Detroit, Mich.  
Diener Mfg. Co., G. W., Chicago, Ill.  
Double Blast Mfg. Co., North Chicago, Ill.  
Quick Meal Stove Co., St. Louis, Mo.
- Trade Extension.**  
Copper & Brass Research Association, New York, N. Y.  
Sheet Steel Trade Extension Committee, Pittsburgh, Pa.
- Trimming—Stove.**  
Fanner Mfg. Co., Cleveland, Ohio
- Ventilators.**  
Arex Company, Chicago, Ill.  
Aelus Dickinson Co., Chicago, Ill.  
Bergers Bros. Co., Philadelphia, Pa.  
Friedley-Voshardt Co., Chicago, Ill.  
Kernchen Co., Chicago, Ill.  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Royal Ventilator Co., Philadelphia, Pa.  
Standard Ventilator Co., Lewisburg, Pa.  
Sturtevant Co., Boston, Mass.
- Ventilators—Ceiling.**  
Eaglesfield Ventilator Co., Indianapolis, Ind.  
Hart & Cooley Co., New Britain, Conn.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Register & Mfg. Co., Cleveland, Ohio  
Tuttle & Bailey Mfg. Co., New York  
Sturtevant Co., B. F., Boston, Mass.
- Windows—Steel.**  
Lupton's Sons Co., David, Philadelphia, Pa.
- Wire—Electrical.**  
American Steel & Wire Co., Chicago, Ill.
- Wire Hoops.**  
American Steel & Wire Co., Chicago, Ill.
- Wire Rope.**  
American Steel & Wire Co., Chicago, Ill.
- Wrenches.**  
Coas Wrench Co., Worcester, Mass.
- Zinc.**  
Merchant & Evans Co., Philadelphia, Pa.  
New Jersey Zinc Co., The, New York, N. Y.



## WANTS AND SALES

Any yearly subscriber to **AMERICAN ARTISAN** may insert advertisements of not more than fifty words in our Want and Sales Columns **WITHOUT CHARGE**.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired.

## BUSINESS CHANCES

**LIGHTNING RODS**—Dealers who are selling Lightning Protection will make money by writing us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable is endorsed by the Mutual Insurance Companies and hundreds of reliable dealers. Write today for samples and prices. **L. K. DIDDIE COMPANY**, Marshfield, Wisconsin.

**For Sale**—Furnace manufacturer desires to sell his entire plant, patents on furnace and equipment to make eleven furnaces per day. Eight years of service by hundreds of users has proven it to be a great heater and uses a third less fuel than any other type. Owing to health will sell at an extremely low figure or will take in a partner with \$25,000. Address C-8, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

**For Sale**—One Arcola Parlor Heater No. 60. Price \$75.00. Terms. Cash with order will send bill of lading with sight draft attached. This heater is absolutely new. It has never been moved off our floor. The porcelain casing is not chipped. It is complete with automatic regulator altitude gauge thermometer and expansion tank fittings. We have never been able to sell this heater and would like to get part of our money out of it. **I. Wilson & Co.**, Dunlap, Iowa. 23-3t

**For Sale**—Roofing and general sheet metal business, located in the best business section of Minneapolis, Minnesota. Will sell all or one-half interest. Business has a very desirable lease on the property it occupies. This is an excellent opportunity for a good man. Address C-10, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

**For Sale**—Or partner wanted for established sheet metal work. Tile, slate and asbestos shingle roofing. Am putting in about 100 furnaces per year and I do no soliciting. This place is in a large territory about 20 miles from Chicago. It will require about \$2,000 for one half interest. Address X-98, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

**Furnace Manufacturers Notice**—A deal can be made for direct factory to consumer sales in city of Milwaukee and county. The finest, largest heating sales and display office in the state of Wisconsin is now maintained on fine business street. 300 to 400 furnaces per year with 50 to 60 boilers extra. Write **John Steffel**, 439 Eastwood Place, Milwaukee, Wisconsin. 22-3t

**For Sale**—A well selected stock of hardware in one of the best county seat towns in northwestern Iowa. Brick building. 29x90, has housed hardware store for over thirty-five years. Buyer can have entire building except for about thirty feet on second floor. Ill health compels owner's retirement. No trade. Address C-15, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

## BUSINESS CHANCES

**For Sale**—Sheet metal shop and building 32x66 frame building in center of city. Business has been established 17 years. This is the town where Ford is building the large power dam. Building, stock and tools \$10,700. \$3,000 down, balance to suit purchaser. Address **Wm. P. Blair & Son**, 14-16 S. Huron St., Ypsilanti, Mich. 25-3t

**For Sale**—Sheet metal shop. Good chance for combination worker. Tinning and plumbing. Will not take much money to handle this shop. Write for particulars. Address C-14, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

**For Sale**—Fully equipped contracting sheet metal shop in fast growing suburb adjoining Chicago. Will invoice or will take a competent live wire who will do the work as partner. Address Q-2, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

**Wanted**—To buy sheet metal and furnace business in a good prosperous town. State reason for selling. Population and particulars. Address C-13, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

**For Sale**—Sheet metal shop in southern Minnesota. Town of 4,500 population. Invoice around \$1,000. Address X-99, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

## HELP WANTED

**Wanted**—A first class sheet metal worker with experience with factory work, heavy sheet iron, blue prints, also pattern cutting, etc. Steady job year round for man who can qualify himself. Don't answer this ad unless fully experienced. Address Q-4, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

Would like to get in touch with a first class warm air furnace and outdoor man to do furnace, guttering and roofing work. A married man preferred who would be interested in making his home in the thriving city of Chattanooga, Tennessee, a population over 100,000. Steady job for right party. **Stutz Brothers**, Chattanooga, Tennessee. 25-3t

**Wanted**—A first class sheet metal man, one who is familiar with estimating and furnace work. Must be able to clerk in hardware store in connection. Prefer married man. Address **Joe J. Voegeli**, Monticello, Wisconsin. 24-3t

## SITUATION WANTED

**Situation Wanted**—By furnace man and sheet metal worker with 15 years' experience. Can do engineering from theory and from practical knowledge. Can cut most patterns, make up work and erect same in a workmanlike manner. Have had experience in factory work sheet metal department of furnace factory and on maintenance as well. Address C-9, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

**Situation Wanted**—An A-1 sheet metal worker, layout man, foreman and engineer with 25 years' experience, seeks position at once. Married man, strictly sober and steady; a hustler; can run shop to advantage; fully experienced in all branches of the trade. A Northern man but have been in Florida for two years. State full particulars and salary paid. Address "Hiram," Box 1703, Sarasota, Florida. 24-3t

**Situation Wanted**—Tinner, plumber and furnace man wishes steady position the year around. Will consider buying a working interest in a good tin and furnace business. Have had 25 years' experience. Can furnish 1st class references. Honest and a willing worker. Prefer hardware shop in connection. Address **W. H. Oneth**, 618 East 5th Street, Des Moines, Iowa. 22-3t

**Situation Wanted**—By first class tinner and furnace man. Can do inside and outside work. 26 years at the trade. Nothing but steady job the year around. Am married. Can do anything that comes in any tin shop. Address **W. J. Mack**, 37 East Main Street, Saint Charles, Illinois. 25-3t

## SITUATION WANTED

**Situation Wanted**—By a good all around plumber, tinner, steamfitter and furnace man. Wants steady job with some hardware firm in a small town. Prefer combination shop or will rent shop where competition is not strong. Am first class combination man. At liberty after January 1st. Address X-97, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

**Situation Wanted**—As salesman and director of furnace installations. Have a thorough knowledge of the business, having learned in the school of experience. Not afraid to don overalls and help with practical end if necessary. Address Q-5, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

**Situation Wanted**—Stove salesman selling a line of gas ranges to hardware and furniture stores wants a line of stovepipe and elbows to sell to above trade on commission basis for 1927. All references. Address C-12, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

**Situation Wanted**—Sheet metal and furnace man will be open for position January 1st. Can do plumbing and heating. Can give A-1 references. Can take charge of work. Married. Only steady position considered. Address X-94, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

**Situation Wanted**—By young practical tinner, in plumbing shop. Good education with some knowledge of plumbing. Can furnish best of references. Want to learn plumbing. Prefer Illinois. Address Q-3, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

**Situation Wanted**—As furnace installer in Wisconsin or northern Iowa. Can estimate and lay out job. Good references. Steady employment desired. Address C-11, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

**Situation Wanted**—By first-class sheet metal worker and furnace man. 25 years' experience. Can also do plumbing. Address C-16, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

**Situation Wanted**—By an experienced all around sheet metal worker with 25 years' experience. Can take charge and run shop. Can come on short notice. Address **P. S. McGuffin**, 36 South Jefferson Street, Battle Creek, Michigan. 12-3t

## TINNERS' TOOLS

**Wanted**—To buy the following second hand tools—8 ft. cornice brake, 30 inch squaring shears, pipe folder, crimper with full set of beaters, circle shears, swaging machine, 36 inch groover, large burning machine, large turning machine, forming rolls, hollow mandrel stake. The above to be in good condition, will pay cash. Address **L. E. Fothergill**, 504 Grant Street, Sycamore, Illinois. 25-3t

**Wanted**—A second-hand cornice brake, 8 or 10 ft. I prefer a Chicago brake, one that is very reasonable in price, as I am just getting started in sheet metal work. Address X-96, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill. 21-3t

**Wanted**—To buy a good set of tinner's tools; state conditions of tools, give list of what you have and best cash price. Address **Klenk Sheet Metal Works**, 417 Fourth street, Defiance, Ohio. 26-3t

**For Sale**—Full set good tinner's tools including one 8-foot steel brake, almost new 31-inch squaring shear. Address **Harry Lyman**, Clarinda, Iowa. 22-3t

**Wanted**—Some good used tinner's tools; sufficient to equip a small shop. Must be cheap for cash. Address **Charles Bruyn**, Belvidere, Illinois. 26-3t

**For Sale**—Complete set of tinner's tools and stock. Good business. Address Q-7, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

**SPECIAL NOTICES**

**The Rate for Special Notices**  
— displayed want ads —  
**\$3.00 per inch per insertion.**

**PATENTS**

**HUBERT E. PECK**  
Patent Attorney  
Barriester Bldg., WASHINGTON, D. C.

**SITUATION WANTED**

Furnace salesman with a good, clean record is open for a position with an established firm. My past record shows that I can produce. Address L-99, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

**A FEW MEN**

with practical furnace selling experience needed to cover desirable sales territories in Nebraska with complete heating line. Only high grade men will be considered.

Territories must be assigned at once. Write promptly and in confidence.

**L. J. Mueller Furnace Co.,**  
Milwaukee, Wisconsin  
19-tf

**INCREASE YOUR INCOME BY  
ADDING AUTO RADIATOR  
REPAIRING**

Others have. So can you. Very little additional equipment is necessary. Write for Catalog J.—F. L. Curfman Mfg. Co., Maryville, Missouri. 23-tf.

**WANTED**

Several good, live salesmen to sell complete unit "Furnace and Fan." Write us in full detail telling why you feel you can sell our line. All replies will be confidential. Our sales force knows of this ad. Address L-98, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

**FURNACE SALESMEN**

Expanding sales make necessary an addition of five experienced salesmen to our force. These positions offer an opportunity to become affiliated with an old, established company, whose position of leadership in the heating field is unquestioned. Your record must stand a careful investigation. Prefer men between 30 and 45 years of age. Address M. E. Ledlie, Ideal Furnace Co., Detroit, Michigan. 22-4t

**SPECIAL NOTICES****FURNACE SALESMEN**

Experienced retail furnace salesmen and furnace installers; splendid proposition for resourceful, energetic men of good character and habits; excellent opportunity to get established in business with a specialty that insures attractive profits; young man, financially responsible preferred, although good moral risks will be interviewed; only those with successful records need apply. Address L-88, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 19-3t

**SIDE LINE SALESMEN  
WANTED. WE PAY \$136.25  
COMMISSION**

On one sale. You can sell our merchandise to sheet metal workers during your spare time. Reliable firm established 1912. Write or wire for particulars. Address L-92, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 25-2t

**FURNACE SALESMAN  
WANTED**

for southern half of Illinois. This furnace has a well established business in this territory. We require a practical furnace man. In replying state age and previous furnace experience. Address L-95, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

**CLEAN LIVING ROOMS**

When sections of WARM AIR FURNACES are double-sealed with INSA-LUTE (liquid porcelain). Painting it over leaky places makes old furnaces clean as new. Eliminates resetting of furnace. Order 5-lb. (half gallon) can at \$3.00—if unsatisfactory—you need not pay for it. If your jobber cannot supply you—order direct.

Technical Products Co. Pittsburgh, Pa.

**Free** 60-page Reference Book

**POLK'S**  
60-PAGE  
DIRECT MAIL  
ADVERTISERS

Mailing List Catalog No. 55

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